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EDGAR J. BUTTENHEIM, Pres. and Mgr.
HAROLD S. BUTTENHEIM, Editor
THEODORE R. KENDALL
Secretary and Engineering Editor
H. M. OLMSTED — M. V. FULLER
ANNA H. CLARK
Associate Editors
HERBERT K. SAXE
Treasurer
PRENTICE C. FORD, Asst. to President — MYRON MacLEOD, Advertising Manager

BRANCH OFFICES
Daily News Building, Chicago
TOM DIX, Vice-President
642 Hanna Building, Cleveland
GEORGE S. CONOVER, Manager
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In THE MUNICIPAL INDEX (the annual reference volume of data and condensed catalogs published by the American City Magazine Corporation) readers will find much material, including lists, and articles on a wide variety of municipal and civic subjects, not published in the monthly issues of the magazine.


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# Beneficial UNEMPLOYMENT RELIEF

## HOW Much Immediate Benefit for Your Unemployed

## HOW Much Lasting Benefit for Your Community

## *From Your Expenditure?*

If you build a new water supply main of LOCK JOINT REINFORCED CONCRETE PRESSURE PIPE, then you will have an eminently satisfactory answer to these two questions.

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*Has ALWAYS Been GOOD – But It Is BETTER THAN EVER In These Days*

# Public Works—Housing—R. F. C. Loans

## *April R. F. C. Loans for Self-Liquidating Projects*

THE Reconstruction Finance Corporation agreed to make the following loans for self-liquidating public works in April:

| | |
|---|---|
| Public Market Co., Portland, Ore., construction of a public market | $724,625 |
| West Michigan Dock & Market Corp., Muskegon, Mich., construction of docks and market | 650,000 |
| Springer, N. Mex., modernization of water system | 37,500 |
| Crestline, Crawford County, Ohio, improvement of water system | 40,000 |
| Michigan City, Ind., modernization of water system | 300,000 |
| Commerce, Texas, improvement of water supply and storage system | 13,250 |
| Arkansas Polytechnic College, Russellville, Ark., remodeling and enlargement of three dormitories | 67,000 |
| Santa Clara, Washington County, Utah, pipe line | 6,300 |
| Woodville, Tyler County, Texas, new water works and sanitary sewer system | 20,000 |
| Maricopa County Municipal Water Conservation District No. 1, Phoenix, Ariz., irrigation project | 1,350,000 |
| Hatch, Dona Ana County, N. Mex., new water-works system | 16,500 |
| Montezuma, Poweshiek County, Iowa, new source of water supply | 9,700 |

A unique use of R.F.C. funds is the grant of a loan of $250,000 to the city of Berlin, N. H., to put 800 unemployed men to work cutting wood, part of which will be used for fuel and the rest sold for pulp-making purposes. The city expects to realize enough from the sale of wood to repay the loan.

## *Eight States Now Eligible for R. F. C. Housing Loans*

*MILLAR'S HOUSING LETTER* (440 S. Dearborn Street, Chicago), which has become the best weekly source of news and ideas on housing progress throughout the United States, reports in its issue of April 17 the recent enactment in South Carolina, Kansas and Arkansas of housing laws under which limited-dividend corporations are made eligible for R.F.C. loans. These states, in addition to New York, Ohio, Texas and New Jersey, previously reported in THE AMERICAN CITY, and Delaware, whose new housing law was signed by the Governor on April 24, bring up to eight the list of states now having such housing legislation. In Illinois, California, Missouri, Pennsylvania, Wisconsin, Minnesota and Maryland, laws are reported "in the mill." In Indiana and Oregon such laws have failed of passage, and in Massachusetts legislation has been postponed until next year.

A "Preparedness Check Sheet" of the main things that a city needs to do to prepare for a program of rehabilitation is published under six headings in the Millar Letter of April 24.

## *United States Conference of Mayors Sponsors Federal Legislation*

CERTAIN measures of Federal legislation which are deemed essential for the continued stability and functioning of the larger cities of the country are being actively sponsored by the United States Conference of Mayors, organized by the mayors of more than fifty important cities at a meeting in Washington, D. C., on February 17 last. National measures to which special consideration is being given by the Conference relate to municipal debt, loans by the Reconstruction Finance Corporation, and unemployment relief. Local financial problems are also being studied, and the Conference issued last month mimeographed reports on "License Taxes as a Source of Municipal Revenue" and on "Municipal Notes and Warrants."

For a number of reasons the Conference asked for and received the cooperation of the American Municipal Association (the Federation of some twenty-five state leagues of municipalities), and that organization now serves as the secretariat for the Conference. Paul V. Betters, therefore, has the double title of Executive Director of the American Municipal Association, and Secretary of the United States Conference of Mayors, with headquarters at Drexel Avenue and 58th Street, Chicago.

There was also published last month by the Public Administration Clearing House, with offices at the above address, a pamphlet listing the staff, organization, set-up, and program and activities of the group of ten national and international organizations in the field of government which have their headquarters in Chicago:

Public Administration Clearing House
American Legislators' Association
Bureau of Public Personnel Administration
American Municipal Association
American Public Welfare Association
Governmental Research Association
International City Managers' Association
The Interstate Assembly
Municipal Finance Officers' Association
United States Conference of Mayors

## *"Housing and Economic Recovery"*

UNDER this heading and "Economic Recovery and Slum Reconstruction," in printed and mimeographed statements respectively, timely and practical suggestions have been made available by John Ihlder, Executive Director of the Pittsburgh Housing Association and the Boston Housing Association. Mr. Ihlder's general theme is that surpluses, or the possibility of creating surpluses of products, form the greatest handicap to restoration of business activity; that money or credit available either from banks or from the Government is of little avail if its use results in products that cannot be sold; and that dwellings are the one product of which the surplus is apparent rather than real.

A five-point housing program is suggested by Mr. Ihlder to include (1) demolition of obsolete houses; (2) repairing or renovation of houses worth the investment; (3) inclusion of the net cost of shelter in the budgets of families receiving public relief; (4) creation of limited-dividend corporations to reconstruct slum or distressed areas; and (5) creation of similar corporations to provide housing for families of low income.

The two documents above mentioned are available on application to Mr. Ihlder at Pittsburgh or Boston.

## *Organizations Warn of Danger of Unplanned Use of Labor in Parks and Forests*

A WARNING against permitting unemployment relief labor, including that of the Federal Conservation Corps, to perform inadequately planned work in parks and forests, was sounded by the Federated Societies on Planning and Parks at their annual meeting here April 19. Represented in the group of organizations are the American Civic Association, the American Institute of Park Executives, the Appalachian Trail Conference, the National Conference on City Planning, and the National Conference on State Parks.

A statement authorized by the group called attention to the fact that ill-advised clean-ups in forests which are designed to be preserved in natural condition may wholly change their character and rob them of irreplaceable values:

"The use of unemployment relief labor in public parks and forests offers a great opportunity to increase the usefulness of these properties and to provide adequate protection for them against fire and other destructive agencies, in addition to the many benefits flowing from such work to those who participate in it.

"The Federated Societies on Planning and Parks perceives, however, that the use of this labor on projects inadequately planned carries with it distinct and considerable possibilities of destruction of certain precious and sometimes irreplaceable values. Clean-up work in forested areas, for example, can be so carried on as completely to change the character of the natural forest; badly placed or ill-advised roads can, to a greater or less degree, wholly destroy unique landscape values; the same result can be produced with badly planned and badly located structures.

"These facts point to the urgent necessity of providing, in connection with all such utilization of relief labor, skillful planning and alert and intelligent supervision; and we urge upon Federal and state authorities alike the necessity of providing for such planning and such supervision."

# *The New Colonial Design Elevated Tank*

This new tank was designed and built for the City of Tallahassee, Fla. It has a capacity of 400,000 gallons and is 78 feet to bottom.

The Colonial design combines beauty and utility. Its pleasing appearance permitted the City of Tallahassee to locate it in a high class residential district, right where the storage was needed.

The shallow depth of the tank proper minimizes the possible variation of head in the system and reduces operating costs.

The April, 1933, issue of our magazine, THE WATER TOWER, contains a detailed story on the Tallahassee installation. If interested, write our nearest office for a copy.

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| New York | 3108 Hudson Terminal Bldg. | San Francisco | 1033 Rialto Bldg. |
| Cleveland | 2236 Midland Bldg. | Seattle | 4343 Smith Tower |
| Detroit | 1501 Lafayette Bldg. | Houston | 2919 Main St. |
| Philadelphia | 1616 "1700" Walnut Street Bldg. | Tulsa | 1425 Philcade Bldg. |
| Boston | 1501 Consolidated Gas Bldg. | Los Angeles | 1403 Wm. Fox Bldg. |
| Birmingham | 1502 N. Fiftieth Street | Havana, Cuba | Edificio Abreu 402 |

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# Pure Water—Man's Greatest Need

## Items on Water Supply and Purification

### *The New Los Angeles Reservoir*

LOCATED almost directly north of Los Angeles, Calif., a distance of approximately 75 miles, lies the deep and narrow valley known as the Bouquet Canyon. At the summit, at an elevation of about 3,008 feet, the Department of Water and Power of the city of Los Angeles is now building a reservoir with a capacity of 35,000 acre-feet, for impounding the waters brought down to it by aqueduct, from the high Sierras in the Owens Valley region, about 300 miles north of the city. The water is to be impounded at Bouquet Canyon and is intended for domestic and irrigation use and for the generation of power.

The dam will be constructed with an earth fill, faced with stone, with side slopes of 3 to 1, a height of 200 feet, and a width of 50 feet at the top. Over 2,000,000 yards of dirt has to be moved. The material is hauled in by crawler trucks of 8-yard capacity, spread by Caterpillar tractors and LeTourneau bulldozers, and tamped with sheepsfoot rollers. It is estimated that the project will cost $4,500,000 and require two years to complete.

The present work is the construction of Bouquet Canyon County Road, which makes a high line over the crest of the dam. Two 1¾-yard Link-Belt diesel shovels are at present working on this job loading Mack trucks. As soon as the road is completed, the shovels will be moved into the borrow-pit. Dirt taken from the borrow-pit is used in the main portion of the dam. The entire project is being done by force account.

H. A. VAN NORMAN,
Chief Engineer, Department of Power and Water, Los Angeles, Calif.

### *Recent Water-Waste Survey in St. Louis*

DURING the fiscal year 1931-1932 in St. Louis, Mo., 46 of the 91 districts or 419.3 miles of water mains were surveyed for leaks. The Pitometer Department of the City Water Department measured 294.4 miles of main, and the Pitometer Co., of New York City, 124.9 miles. Of these districts, 87 per cent were those in which excessive leakage existed in 1930-31.

The summary of the 46 districts is as follows:

| | |
|---|---|
| Total consumption | 63,608,000 gpd |
| Minimum night rate | 36,082,000 gpd |
| Ratio night to day | 57 per cent |
| Metered consumption | 16,083,000 gpd |
| Miles of main | 419.3 miles |
| Number of fixture leaks found | 8,141 |
| Service pipe leakage estimated | 1,321,000 gpd |
| Total estimated leakage | 6,695,000 gpd |
| Ratio of city covered | 45 per cent |
| Saving in chemicals and fuel if waste were eliminated | $26,655.95 per year |

The total estimated leakage in 1930-31 amounted to 7,890,000 gpd on 500 miles of main, equivalent to 15,780 gpd per mile of main; and the total estimated leakage of 1931-32 amounted to 6,695,000 gpd on 419.3 miles of main, equivalent to 15,970 gpd per mile of main. No improvement had apparently been made in reducing the amount of leakage. This is because the majority of the districts enumerated are in the older part of the city in second and third class residential sections, where plumbing fixtures are old and out of date. Frequent inspections are necessary in these districts in order to keep the leakage from increasing. Although 15,970 gpd per mile of main is exceptionally high, it must be remembered that these districts represent about 60 per cent of all the waste in St. Louis. On some of the services, leaks have occurred as many as four and five times. Constant and rigid inspection will be continued until metering can be accomplished.

—From the annual report of THOMAS J. SKINKER, Division Engineer, Distribution Section, Water Department, St. Louis, Mo.

### *The Financial Policy of the Pasadena Water Department*

THERE has been no change in the water rates charged in Pasadena, Calif., since July 2, 1924, when the present rates were established to meet the added costs incident to the continuing recession in the ground-water levels. These rates are:

| Size of Meter | Domestic Rates | Monthly Min. Charge |
|---|---|---|
| ⅝-inch | For first 500 cu. ft. or less | $1.00 |
| ¾-inch | For first 500 cu. ft. or less | 1.15 |
| 1-inch | For first 500 cu. ft. or less | 1.40 |
| 1½-inch | For first 700 cu. ft. or less | 2.10 |
| 2-inch | For first 1,000 cu. ft. or less | 2.85 |
| 3-inch | For first 1,500 cu. ft. or less | 5.60 |
| 4-inch | For first 2,000 cu. ft. or less | 8.10 |
| Water used in excess of the minimum charge, per 100 cubic feet | | .13 |

IRRIGATION RATES

Rate for irrigation service is $0.06 per 100 cubic feet plus the following monthly service charge:

| | |
|---|---|
| ⅝-inch meters | $0.45 |
| ¾-inch meters | .50 |
| 1-inch meters | .60 |
| 1½-inch meters | .85 |
| 2-inch meters | 1.10 |
| 3-inch meters | 1.85 |
| 4-inch meters | 2.35 |

Within the original city as existing in 1912, when the Water Department was organized, replacement of water mains is made without cost to abutting property, and extensions in existing streets are made at the rather nominal charge of 50 cents per front foot. In territory annexed to the city since November 1, 1912, and in new subdivisions, new cast iron mains are assessed to the property benefited thereby.

The Department charges for new service connections but not for meters, other than irrigation meters, in accordance with the following schedule:

| | |
|---|---|
| ¾-inch | $15.00 |
| 1-inch | 20.00 |
| 1½-inch | 35.00 |
| 2-inch | 45.00 |
| Larger than 2-inch | Actual cost |

Where services are forced in ahead of street work by resolution of the Board and assessments collected by the Street Department, 10 per cent is added to the foregoing charges by that Department.

The Water Department, since its organization, has not received any revenue whatsoever directly from the general tax levy. It meets all operation, maintenance, depreciation, bond interest and redemption, as well as much construction, from its normal revenues. Water is furnished to the city for fire purposes and for flushing of sewers, free of any charge, though this is not equitable to the water user. As previously noted, water is furnished the city for park and power plant purposes at the low rate of 6 cents per 100 cubic feet, which is less than one-half the domestic rate of water.

On the other hand, the Water Department pays for every service received from the other departments of the city, including rental of space occupied in the City Hall and other buildings, light, power, heat, janitor service and portions of the salaries of the City Attorney, Controller and other officers and employees rendering any ordinary or special service to the Water Department.

S. B. MORRIS,
Chief Engineer and General Manager.

### *Three Miles of Electric-Welded Main*

FORT WAYNE, IND., is installing a 42-inch raw-water main three miles long from an impounding dam in the St. Joseph River to the filtration plant in Three Rivers Park. More than 1,200 tons of ⅜-inch and ½-inch Toncan iron plates are being used in the construction of the pipe, which is being fabricated by the American Locomotive Works at Dunkirk, N. Y. With the necessary capital on hand to meet an important need of the city, the decision was made to install this pipe of corrosion-resisting material, using the most modern method of fabrication. The contractor for the work is John Dehner, Inc., Fort Wayne, Ind., with Hoad, Decker, Shoecraft & Drury, Ann Arbor, Mich., consulting engineers.

CHARLES B. YOBST,
Superintendent of Water Works, Fort Wayne, Ind.

BALANCED DESIGN!

*The "Plus" quality in American and Niagara Water Meters*

Each part in a water meter must be well designed, finely built, if the meter is to give reasonable service. But an aggregation of fine parts is not enough to assure truly fine performance. It requires something "plus." *Balanced design* is essential!

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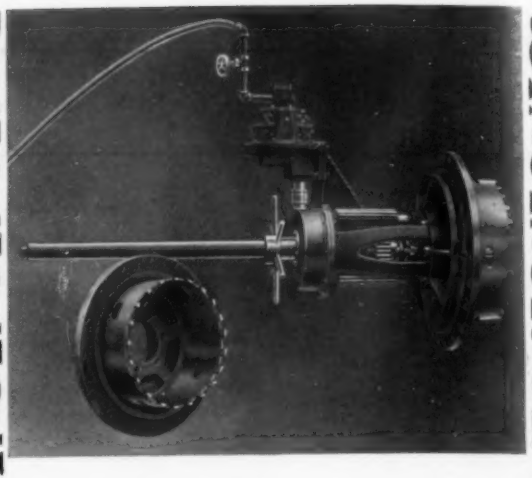

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THE A. P. SMITH MFG. CO. EAST ORANGE, N. J.

# Water Meters Aid Revenue

**Items on Advantages of Meters**

### *Mobile, Ala.*

MOBILE'S population has increased successively from 51,220 in 1910, when only 993 meters were installed, to 62,177 in 1920, when the meters installed amounted to 8,064, and a population of 68,202 in 1930, when the total number of meters had risen to 15,260. In 1932 the population was 69,432 and there were 15,578 meters installed, which amounted to 100 per cent metering for both domestic and industrial services, using Hersey and Badger meters.—THOMAS C. WHITE, Superintendent, Water Department.

### *Talladega, Ala.*

TALLADEGA has been 100 per cent metered as to both domestic and industrial services since 1900, when the population was 3,000. The population increased to 4,000 in 1910, 4,500 in 1920, 8,500 in 1930, and was 8,500 in 1932. The per capita daily consumption in 1930 and 1932 was 60 gallons.—D. J. DOUGHERTY, Superintendent, Water Department.

### *Blytheville, Ark.*

PRIOR to 1920 the water works of Blytheville were not metered and the plant was practically in a bankrupt state. In 1920, when the population was 5,500, the system was 100 per cent metered and the average daily consumption was found to be 45 gallons per capita. In 1930 the population had increased to 10,176, the system was still 100 per cent metered and the consumption had increased to 56 gallons per capita. The population decreased slightly in 1932, to 10,000, and the consumption increased to 60 gallons per capita.—HARRY HILL, Manager, Associated Utilities, Inc.

### *Williams, Ariz.*

THE population of Williams was 1,300 in 1920, when the water system both domestic and industrial was 50 per cent metered and the daily consumption was 40 gallons per capita. By 1930 the population had increased to 2,400, the system had become 100 per cent metered, and the consumption had risen to 50 gallons per capita. The revenue of the Water Department increased 100 per cent when the system became 100 per cent metered. In 1932, with a population of 2,500, the town was still 100 per cent metered and the daily consumption remained at 50 gallons per capita.—J. C. BUTLER, Town Clerk.

### *Longmont, Colo.*

THE only metering which has been done in Longmont has been industrial metering or metering on outside property which has been added. The city domestic water supply is not metered. The population of Longmont in 1900 was 5,000, when 10 per cent of the domestic services and 100 per cent of the industrial services were metered. In 1932 the population was 7,000, the same proportion of services were metered, and the average daily consumption was 285 gallons per capita.—H. E. RICHMOND, Superintendent, Water Department.

### *Clearwater, Fla.*

THE population of Clearwater was 7,500 in 1932 when 95.5 per cent of the domestic services were metered and 100 per cent of the industrial services were metered. The average daily consumption was 62 gallons per capita. —H. S. RIDDLE, City Manager.

### *Fort Lauderdale, Fla.*

THE population of Fort Lauderdale in 1932 was 8,500, and the domestic and industrial services were 100 per cent metered, resulting in a water consumption of 60 gallons per capita daily. About 1,850 meters are in use during the summer, and about 2,200 during the winter, mostly on domestic services. The filtration plant has a capacity of 4,000,000 gallons per day. The system includes 65 miles of cast iron mains and 570 fire hydrants. The plant and distribution system is about six times larger than is needed by the city, for it was built during the Florida boom. In 1931 the collections were $68,000 and the operating costs $28,000. The profit on operations would not pay the interest on the bonds, however. The plant and system are now valued at $1,250,000.—JOHN CHALFANT, Superintendent, Water Department.

### *Lake Worth, Fla.*

LAKE WORTH, FLA., has always maintained its water-works services 100 per cent metered. The population in 1920 was 4,000 and the daily per capita consumption was 26 gallons. In 1930, the population had increased to 8,000 and the consumption to 88 gallons per capita daily; and in 1932, with a population still 8,000, the consumption had increased to 94 gallons per capita daily. —WARD RANDOLPH, Superintendent, Water Department.

### *Fitzgerald, Ga.*

IN 1910 the population of Fitzgerald was 7,000, the domestic and industrial services were only 5 per cent metered, and the per capita daily consumption was not known. In 1920 all services were metered, and this has been maintained ever since. In 1930, the population was still 7,000, and the average daily consumption 330,000 gallons. The population decreased in 1932 to 6,800, and the consumption remained constant. —B. L. COBURN, Superintendent, Water Department.

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THE water system of Thomasville has been 100 per cent metered for 25 years. The population is 11,000, and the average daily consumption per capita is 55 gallons.—D. R. PRINGLE, Superintendent, Water Department.

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FILER, IDAHO, has had an interesting history. In 1900 the town did not exist and in 1910 the population was only 200 with water system installed in 1910. In 1916 all services were metered. In 1920 the population was 1,012 and the daily consumption 20 gallons per capita. The population in 1930 was 1,008, and in 1932, 1,025, and the average daily consumption has remained constant at 20 gallons per capita.—L. D. ALLEN, Superintendent of Water Works.

### *Lewiston, Idaho*

IN 1910 the consumption of water in Lewiston was 319 gallons per capita daily. In 1920 this had been reduced to 251 gallons per capita, with 79 per cent of domestic and industrial services metered and the population 6,600. In 1930 the population had increased to 9,402, all domestic and industrial services were metered and the daily consumption had been reduced to 173 gallons per capita. In 1932 the population had dropped to 9,000 and the daily consumption to 150 gallons per capita.—W. P. HUGHES, City Engineer and Water Superintendent.

### *Montpelier, Idaho*

THE population of Montpelier is 3,000, with 33 per cent of the domestic services and 100 per cent of the industrial services metered. The average daily per capita consumption is 400 gallons. The Water Department in one year gained $450 revenue from creameries, meat markets and service stations due to industrial metering. The resident meters did not show much gain in revenue, although the installation of meters has stopped a great deal of water waste from leaks and has materially reduced the use of house taps for irrigation, which previously had been used at night under cover of darkness to overcome the charge for this use.—JAMES WHINHAM, Superintendent of Water Works.

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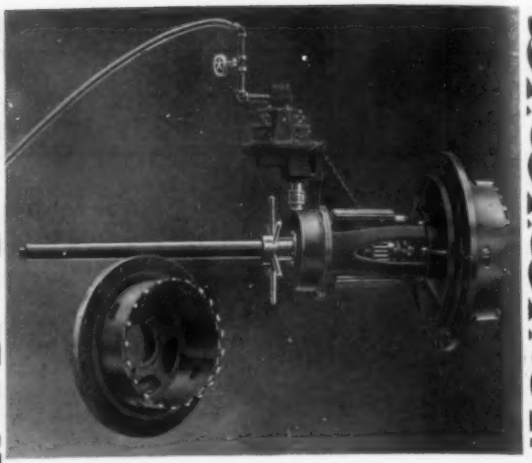

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# Water Meters Aid Revenue

**Items on Advantages of Meters**

### *Mobile, Ala.*

MOBILE'S population has increased successively from 51,220 in 1910, when only 993 meters were installed, to 62,177 in 1920, when the meters installed amounted to 8,064, and a population of 68,202 in 1930, when the total number of meters had risen to 15,260. In 1932 the population was 69,432 and there were 15,578 meters installed, which amounted to 100 per cent metering for both domestic and industrial services, using Hersey and Badger meters.—THOMAS C. WHITE, Superintendent, Water Department.

### *Talladega, Ala.*

TALLADEGA has been 100 per cent metered as to both domestic and industrial services since 1900, when the population was 3,000. The population increased to 4,000 in 1910, 4,500 in 1920, 8,500 in 1930, and was 8,500 in 1932. The per capita daily consumption in 1930 and 1932 was 60 gallons.—D. J. DOUGHERTY, Superintendent, Water Department.

### *Blytheville, Ark.*

PRIOR to 1920 the water works of Blytheville were not metered and the plant was practically in a bankrupt state. In 1920, when the population was 5,500, the system was 100 per cent metered and the average daily consumption was found to be 45 gallons per capita. In 1930 the population had increased to 10,176, the system was still 100 per cent metered and the consumption had increased to 56 gallons per capita. The population decreased slightly in 1932, to 10,000, and the consumption increased to 60 gallons per capita.—HARRY HILL, Manager, Associated Utilities, Inc.

### *Williams, Ariz.*

THE population of Williams was 1,300 in 1920, when the water system both domestic and industrial was 50 per cent metered and the daily consumption was 40 gallons per capita. By 1930 the population had increased to 2,400, the system had become 100 per cent metered, and the consumption had risen to 50 gallons per capita. The revenue of the Water Department increased 100 per cent when the system became 100 per cent metered. In 1932, with a population of 2,500, the town was still 100 per cent metered and the daily consumption remained at 50 gallons per capita.—J. C. BUTLER, Town Clerk.

### *Longmont, Colo.*

THE only metering which has been done in Longmont has been industrial metering or metering on outside property which has been added. The city domestic water supply is not metered. The population of Longmont in 1900 was 5,000, when 10 per cent of the domestic services and 100 per cent of the industrial services were metered. In 1932 the population was 7,000, the same proportion of services were metered, and the average daily consumption was 285 gallons per capita.—H. E. RICHMOND, Superintendent, Water Department.

### *Clearwater, Fla.*

THE population of Clearwater was 7,500 in 1932 when 95.5 per cent of the domestic services were metered and 100 per cent of the industrial services were metered. The average daily consumption was 62 gallons per capita. —H. S. RIDDLE, City Manager.

### *Fort Lauderdale, Fla.*

THE population of Fort Lauderdale in 1932 was 8,500, and the domestic and industrial services were 100 per cent metered, resulting in a water consumption of 60 gallons per capita daily. About 1,850 meters are in use during the summer, and about 2,200 during the winter, mostly on domestic services. The filtration plant has a capacity of 4,000,000 gallons per day. The system includes 65 miles of cast iron mains and 570 fire hydrants. The plant and distribution system is about six times larger than is needed by the city, for it was built during the Florida boom. In 1931 the collections were $68,000 and the operating costs $28,000. The profit on operations would not pay the interest on the bonds, however. The plant and system are now valued at $1,250,000.—JOHN CHALFANT, Superintendent, Water Department.

### *Lake Worth, Fla.*

LAKE WORTH, FLA., has always maintained its water-works services 100 per cent metered. The population in 1920 was 4,000 and the daily per capita consumption was 26 gallons. In 1930, the population had increased to 8,000 and the consumption to 98 gallons per capita daily; and in 1932, with a population still 8,000, the consumption had increased to 94 gallons per capita daily. —WARD RANDOLPH, Superintendent, Water Department.

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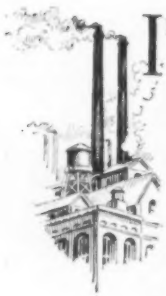

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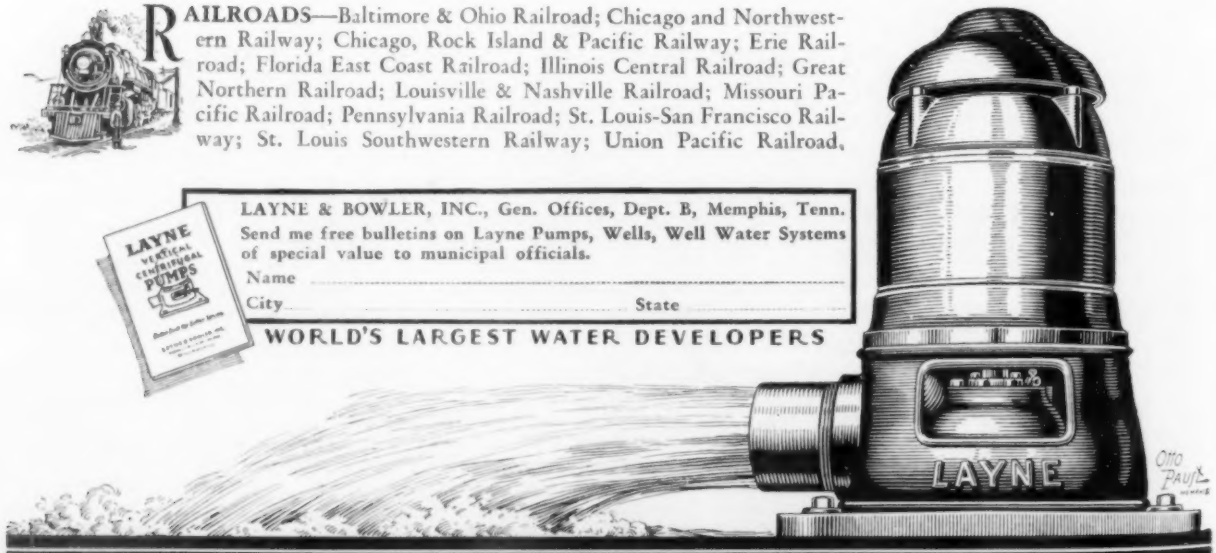


# LAYNE PUMPS
## AND WELL WATER SYSTEMS

# Construction and Maintenance

**Engineering and Highway Departments**

### *An Investigation of Mud-Jack Soils*

THE report of the Committee on Maintenance, B. C. Tiney, Chairman, presented at the twelfth annual meeting of the Highway Research Board, contains some interesting facts on types of soils which are most advantageous for use in raising pavement slabs. Success in raising pavement slabs permanently by the mud-jack process depends to a large degree upon the characteristics of the materials used. The effects of texture, amount of organic material present, amount of cement and amount of water needed for workability upon the shrinkage properties of the soil appear to be the significant factors. Two hundred and fifty samples of soils with mud-jacks of both the piston and compressed-air types were analyzed and the range in satisfactory grading for each type determined. In general, coarser soil can be used with the compressed-air jack than with the piston jack. From a series of laboratory tests the effects of texture, organic content, water content and cement content upon shrinkage, workability and stability were studied, resulting in diagrams showing the relation between amount of cement, organic content and shrinkage. It appears to be desirable to use as coarse a soil containing as little organic material as possible. Unless the amount of organic material is limited, the use of the customary small amount of cement, usually 5 per cent, will have little effect in reducing shrinkage, since high organic content requires an excessive amount of water for workability.

### *Six Years' Service of Cotton Fabrics in Bituminous Roads*

AFTER six years of service under general traffic conditions on stretches of South Carolina highways, cotton fabric used as a bonding material has shown its value. A report by Charles H. Moorefield, State Highway Engineer of South Carolina, shows that the fabric is still sound and apparently as strong as when it was installed. Mr. Moorefield stated: "The cotton fabric unquestionably served to strengthen the surfacing and to reduce raveling. In this first section there is very little evidence of raveling, even at the extreme edge. By holding the roadbed intact, the maintenance cost is reduced and necessary retrenchment made less frequent."

The use of cotton fabric for road work is especially adaptable to what are classed as "top-soil" roads, with a sand and gravel base with clay binder, which are common on secondary highways. The cotton material used is an open-mesh fabric, 36 inches wide, weighing about 4½ ounces per yard. It is applied after the original road surface has been scarified and graded and given a penetration coat of light tar. The fabric is put down while the tar is still sticky, and given a treatment of hot asphaltic oil. Sand or gravel or finely crushed stone is then applied as a top surfacing, and the road is ready for traffic. The fabric acts as a waterproof blanket as well as a binder. It holds the surfacing material in place, prevents corrugations and ruts, resists breakage by impact, and tends to retard or prevent flow and displacement of the materials in the bituminous surface treatment. The strength it imparts at the edges of the surfacing also resists raveling. Other states which have used cotton fabric in highway construction include Georgia, Texas and Louisiana.

—From a report of the Cotton-Textile Institute, New York City.

### *Calcium Chloride as a Dust Layer*

CALCIUM chloride is a salt which has the peculiar property of extracting sufficient water from the air to dissolve itself. The quantity of water which it absorbs depends somewhat upon the moisture or humidity conditions of the atmosphere; thus under very humid conditions, such as those which exist in the early morning or late evening, this material absorbs from five to ten times its weight of water.

Before using the dust layer, it is well to give some attention to the surface on which it is to be applied. A little time and attention given to this matter in the early spring will repay the user of the dust layer in the satisfactory service resulting later in the season. First of all, the surface should be bladed smooth, and large stones, if any be present, should be raked out and removed. Stones over ¾-inch in diameter are recognized by all road men as a real handicap to maintenance of smooth surface.

To get the best results, a uniform spread of the dust layer is necessary. The device in most general use is similar to a lime drill. The calcium chloride is delivered to a hopper 8 feet long carried on two pneumatic-tired wheels. Adjustable openings are spaced at 6-inch centers in the bottom of the hopper. The stream of flaked material flows out of these holes onto an inclined board which deflects or spreads it evenly over the entire surface area. Under-inflation of the tires will frequently aid in eliminating vibration of the hopper and thus improve distribution of the flakes. The initial calcium chloride treatment will range from ½ to 1 pound per square yard. Later applications like the initial one will give greater satisfaction if made following rain and a maintenance operation. From ¼ to ½ pound per square yard will be required, depending upon conditions of the surface and the traffic to be met.

—From a paper by CHARLES E. SAWYER, JR., City Engineer, Traverse City, Mich., presented before the International Association of Public Works Officials.

ONE OF THE MOTOR PICK-UP SWEEPERS OF WINTER HAVEN, FLA., NOW ENTERING ITS FOURTH YEAR OF OPERATION

The first machine of this type was purchased in 1923 and this, the second, early in 1929. The summary of the operation of this machine for 1932 shows that it swept 3,485 miles of pavement, collecting 644 loads or 966 cubic yards of debris. The cost of cleaning per mile of pavement was 65 cents, or $2.38 per cubic yard. The machine used 1,070 gallons of gasoline at a cost of $192.60; 64 quarts of oil at a cost of $12.80; and 76 pounds of grease at a cost of $9.12. During the year 3,000 pounds of fiber were used in the brooms, at 4½ cents per pound. Repairs for the machine for the year totaled $427.88, of which $398.03 was used for the installation of new wheels to carry pneumatic tires, replacing the solid rubber tires on the rear wheels. The machine operated 1,240 hours during the year

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# Treatment Conserves Health

**SEWERAGE and SEWAGE DISPOSAL**

### *Ohio Court Rules That City Must Build Sewage Treatment Plant*

A RECENT ruling of the Ohio Supreme Court makes it mandatory that Ohio cities construct sewage treatment plants when ordered by the State Department of Health. This is of particular interest to municipal engineers, since the precedent set down in this court rule may be followed by courts in many other states when a similar condition arises. The ruling also calls attention to the value of state legislation permitting the construction and operation of sewerage systems and treatment plants on a self-supporting rental basis. When a mandatory order has been received from the State Health Department, the operation of sewage works on a self-supporting basis allows financing from an R.F.C. loan or from other sources which do not necessitate a popular vote on a bond issue which becomes a general city liability.

The most interesting immediate result of this court decision is evident in Columbus, Ohio. In November, 1932, the voters turned down a bond issue to build a sewage treatment plant which had been ordered by the State Department of Health. On January 13, 1933, the city was required to report to the state just how it would comply with the order. While the engineering plans for a new activated sludge plant were ready, no financial plans had been made. In order to meet the requirements of the State Health Department, the city of Columbus may therefore resort to the sewer rental method of financing the new works, or it may adopt a rather extended financing program using relief money supplemented by smaller bond issues within statutory limitations.

### *New Sewage Disposal Plant at Colby, Kans.*

ONE of the most modern sewage disposal plants in Kansas was recently completed at Colby, a city of 2,000 population. The plant cost $41,480, but would have cost fully $60,000 if constructed two years ago. It consists of an Imhoff settling tank, a trickling rock filter, a secondary settling tank, a six-compartment sludge bed, and an automatic rotary distributor. There are but five other rotary distributors in Kansas on sewage plants and only two in Iowa.

With all its modern features, the new plant is largely automatic, and ten minutes' attention a day is about all that it requires except for cleaning out the sludge beds every three months. The capacity of the plant is sufficient to care for the estimated growth of the city for a long period of years or until the population reaches about 3,500.

The project, in addition to being completed at a big saving in money, afforded employment for a large number of men. As much work as possible was done by hand, thus giving jobs to more men than might have been used otherwise. The contractor, however, was well satisfied with the energy and attitude of the men who were employed on the project, and found them delivering a full day's work all the time. Labor was paid 40 cents an hour. With the generally lower scale of prices and the stiff competition among the contractors, it is believed that Colby got its sewage plant at a very satisfactory price and acted wisely in having the work done now.

The plant was built by J. Leo Hoak, contractor, of Des Moines, Iowa. E. T. Archer & Co., consulting engineers, of Kansas City, Mo., designed the plant and were represented by Fred Greene as resident engineer during construction. The American Cast Iron Pipe Co. furnished approximately 30 tons of cast iron pipe and fittings for the plant.

### *Suggestions for Cleaning Catch-Basins*

SINCE most of the material deposited in sewers is washed through catch-basins during rainstorms, and since these structures are the two chief sources through which water enters the sewers, great care and thought should be given to the design and construction of these structures. Catch-basins are primarily intended to catch and retain heavy material while permitting water to flow to the sewer. This material may be either organic matter washed in from the street pavement or, in the suburban districts, heavy material washed in from the hillsides and unimproved streets. The organic matter in the basins becomes putrid, with a very offensive odor, during the hot seasons, and it is an unpleasant and expensive task to remove this material by the hand and bucket method. Cleaning can ordinarily be done by hand flushing and by modern machinery with pumps and suction hose. This equipment gives best results when the débris within the catch-basin is free from sticks and stones. In outlying districts where the catch-basins are built with miscellaneous material, the most practical is the hand and fire hose method.

The bucket design of catch-basin, where a perforated iron bucket is placed within, into which the heavy material is washed, gives a very economical opportunity for cleaning. These basins can be cleaned by lifting the bucket by means of a hoist attached to the truck, and dumping the material through the bottom of the bucket into the truck. A comparison of time required for cleaning catch-basins is of interest. By the hand method it takes two men from two to three hours to clean a basin. By a catch-basin cleaner of the pump and suction type it takes three men from twenty to forty minutes to clean a basin, and where the bucket type of basin is installed, two men can clean a basin in from five to ten minutes.

Inlets of special masonry design connected to sewers without traps, and inlets connected directly to open ends of sewers, require attention to prevent washing of débris, clogging of the sewer and damage to property by overflow. Brush, leaves, sticks, stones and miscellaneous rubbish from dumps along small streams are the principal causes of trouble. Retainers commonly called débris catchers, constructed across watercourses or small streams, are found serviceable and effective to prevent clogging of inlets. Material from débris catchers can be removed by the sewer maintenance department twice a year.

A structure of this type is located in the Spring Garden Avenue Run, North Side, Pittsburgh, Pa., where a 72-inch sewer carries the water from a watershed partly within the city and partly in Reserve Township. There are two old rubbish dumps, along this run in the township, from which material is washed during heavy rain. To prevent clogging of the inlet two débris catchers are constructed, one of wood and one of steel. The wooden structure consists of a 6 x 8-inch stringer with three 6 x 8-inch vertical posts on 6-foot 3-inch centers, and 6 x 8-inch braces at 45 degrees on the downstream side. At the edge are 2 x 6-inch pieces braced at 30 degrees on 12-inch centers on the upstream side, which forms a screen to retain débris.

A second débris catcher, made of steel, is located 400 feet upstream from No. 1. It has a span of 24 feet and a height of 7 feet. This structure consists of a 10-inch I-beam stringer with three 6-inch I-beams for bracing on the downstream side, and 4-inch channels on 12-inch centers on the upstream side, forming a screen. The ends of the stringer are anchored in concrete, and the ends of the braces and screen members are embedded in a concrete apron which extends along the bed of the run for a distance of 25 feet. A concrete apron 15 feet in width and side walls 4 to 7 feet high were constructed below débris catcher No. 1 on a grade of 3 to 8 per cent so as to give the proper increase in velocity of water to enter the sewer. The efficiency of this sewer and inlet depends on the cleaning of the débris catcher.

—From a paper presented by I. CHARLES PALMER, Engineer in Charge, Sewer Construction and Design, Pittsburgh, Pa., before the International Association of Public Works Officials.

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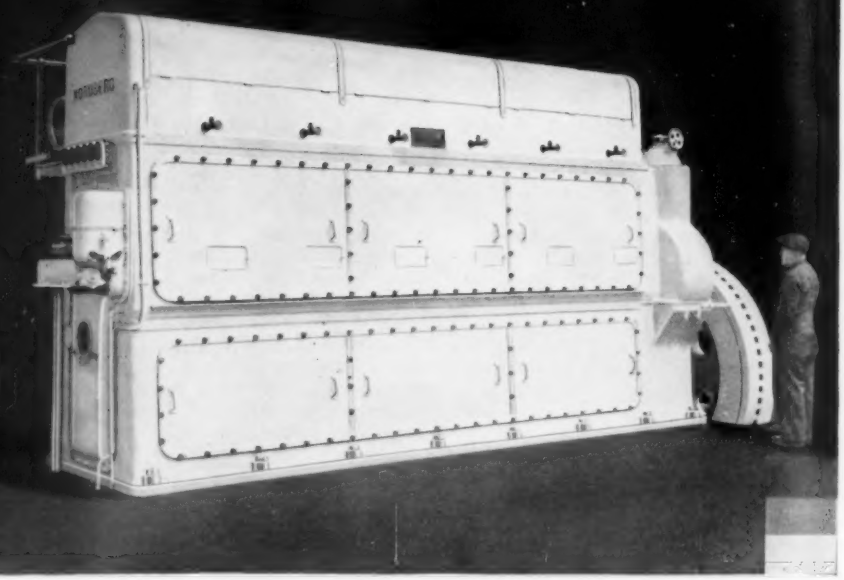

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Write for Bulletin 51 describing these new four-cycle engines, or for other bulletins describing the different types built by Nordberg.

## NORDBERG MFG. CO.

**MILWAUKEE, WISCONSIN**

WALTER A. HEIMBUECHER
City Engineer
University City, Mo.
(Appointed 1913)

RALPH E. ROOP
County Engr., Adams Co.,
Decatur, Ind.
(Appointed 1928)

C. H. STEVENS
City Engineer
Mason City, Iowa
(Appointed 1923)

MICHAEL W. WIPFLER
City Engineer
Elmira, N. Y.
(Appointed 1928)

MERRILL D. KNIGHT, JR.
Director of Public Works
Lynchburg, Va.
(Appointed 1925)

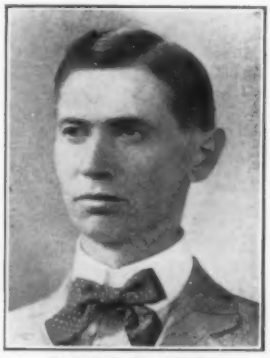
# Who's Who in City & County Engineering

*One of a Series of Portraits of Engineering Officials, Which Has Appeared Monthly Since April, 1928*

DAVID M. GOOD
City Engineer
Williamson, W. Va.
(Appointed 1918)

E. RUMSEY BRADSHAW
Commissioner of Public Works
Paducah, Ky.
(Appointed 1927)

LEROY H. KNIGHT
Village Engineer
Newark, N. Y.
(Appointed 1927)



ROBERT H. JONES
City Engineer
Independence, Mo.
(Appointed 1921)

WALTER H. CULLEN
City Engineer
Dubuque, Iowa
(Appointed 1918)

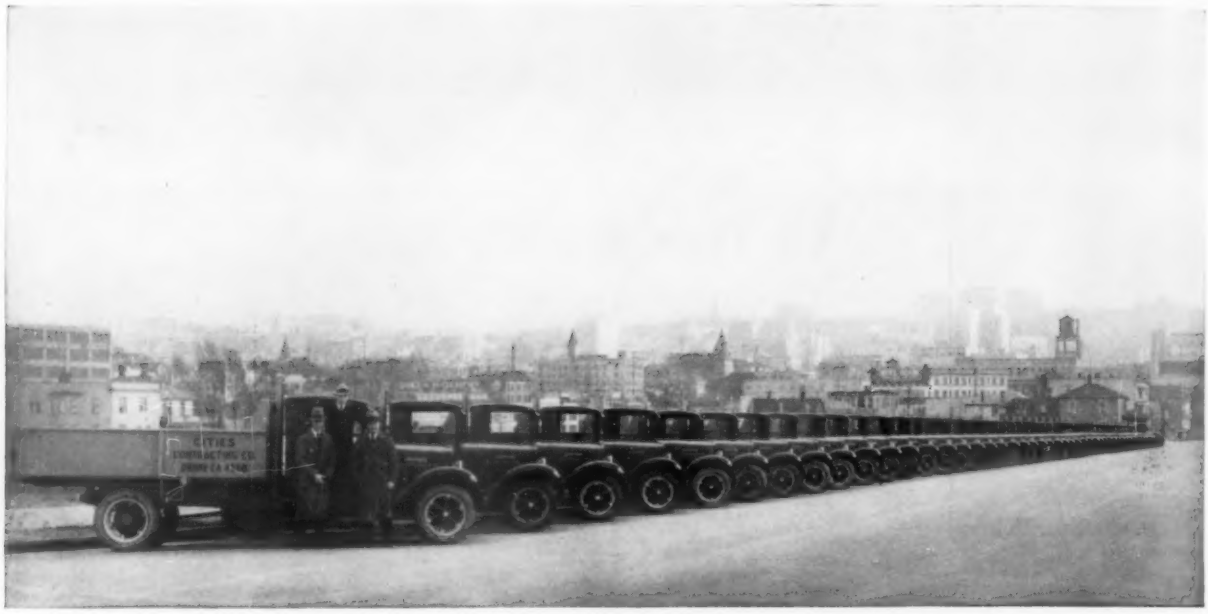
DON B. RUSSELL
City Engineer
Oskaloosa, Iowa
(Appointed 1923)

T. FRED OLDER
City Engineer
Ypsilanti, Mich.
(Appointed 1919)

HARRY J. HANMER
City Engineer
Gloversville, N. Y.
(Appointed 1913)

JOHN WILSON
City Engineer
Duluth, Minn.
(Appointed 1912)

# 50 International Trucks Collect Garbage in Seattle



This is the fleet of International Trucks owned by the Cities Contracting Company which has the contract for collecting garbage in Seattle. From left to right are Messrs. Tierney, Bank, and Kelly, the men behind the Cities Company.

THESE 50 International Trucks now handle the collection of garbage in Seattle, Wash., for the Cities Contracting Company which has a five-year contract for garbage collection. This system, which went into effect January 1, 1933, means a saving of nearly $400,000 annually for Seattle, compared to the former cost of this work. The Internationals, by their low cost of operation and maintenance, are playing an important part in making this saving possible.

Whether a city operates its own trucks or contracts for municipal hauling, savings are bound to result if International Trucks do the work. They have an impressive record for economy in municipal and other service. They are quality trucks all the way through, with a reputation for long truck life. The largest Company-owned truck service organization in the world protects them in their daily work.

International Trucks are built in sizes ranging from ½-ton to 7½-ton, chassis prices from $360 up, f. o. b. factory. All types of bodies and equipment for municipal service can be obtained. Ask the nearest of 184 Company-owned branches in the United States and Canada, or an International Truck dealer, for a demonstration.

Write us for catalogs.

INTERNATIONAL HARVESTER COMPANY
OF AMERICA
606 So. Michigan Ave. (*Incorporated*) Chicago, Illinois

**INTERNATIONAL TRUCKS**

# METHODS and COSTS of REFUSE COLLECTION and DISPOSAL

### *Buffalo, N. Y.*

The city of Buffalo, population 573,076, collects the garbage throughout the city, using 123 trailers. Fourteen of these trailers have a capacity of 5 to 7 cubic yards and 109 have a capacity of 16 to 24 cubic yards. Twelve 5-ton tractors are used to haul these trailers. Additional collection equipment consists of twelve 5-ton dump trucks with bodies from 8 to 11 cubic yards. Buffalo does not collect garbage separately. All garbage is wrapped in paper and deposited in the refuse receptacle, hauled to the incinerator and burned. Ashes are collected separately and go to the dump, while all other refuse goes to the incinerator.—Edward J. Werner, Director of Streets.

### *Geneva, N. Y.*

The city of Geneva, population 16,053, awards a single annual contract for the collection of garbage. The present contractor is using one 2½-ton capacity wagon and one 4-ton motor truck. He is disposing of the garbage by feeding to hogs.—James T. Madigan, Sanitary Inspector.

### *Hempstead, N. Y.*

Collection of garbage in Hempstead, estimated population 20,000, is handled entirely by the city, using 2- to 5-ton motor trucks with capacities of 8 to 16 cubic yards. The garbage is disposed of by incineration.—John M. Stoddard, Superintendent of Public Works.

### *Newburgh, N. Y.*

Three motor trucks, two equipped with 8-cubic-yard-bodies and one with a 5-cubic-yard body, are used by the city of Newburgh, population 31,275, for the collection of garbage. All garbage is disposed of in a Hiler incinerator.—John W. Gardiner, Superintendent of Streets.

### *Rochester, N. Y.*

The city of Rochester, population 328,132, collects garbage throughout the city by twenty-eight 3½-yard wagons and seven 5-ton and two 1½-ton motor trucks. The garbage is collected twice a week from June to October, and once a week from October to June.—John Stucke, Superintendent of Collection.

### *Asheville, N. C.*

In Asheville, population 50,193, the city collects all the garbage, using seven 1½-ton motor trucks with 4- and 5-yard bodies. The garbage is disposed of entirely at the municipal incinerator.—P. Frady, Superintendent of Sanitation.

### *Henderson, N. C.*

Two 1½-ton Ford trucks with 3½-cubic-yard bodies are used by the city of Henderson, population 6,345, for the collection of garbage. The garbage is disposed of by dumping on the ground.—W. M. Coffin, Superintendent of Streets.

### *Monroe, N. C.*

In Monroe, population 6,100, the city uses two 1½-ton trucks with 4-cubic-yard bodies for the collection of garbage. The garbage is disposed of on a sanitary fill.—H. L. Burdette, City Manager.

### *Statesville, N. C.*

One 1-ton and two 1½-ton motor trucks are used by the city of Statesville, population 10,490, for the collection of garbage. For disposal the garbage is hauled 2 miles north of the city and burned.—J. Will Mills, Superintendent, Sanitary Department.

### *Wilson, N. C.*

Four 3-cubic-yard wagons and two motor trucks, each of 5 cubic yards capacity, are used for the collection of garbage, in addition to one 10-cubic-yard trailer which is used part time, in Wilson, population 12,613. The garbage is disposed of by burning in the open. The wagons are soon to be replaced by a single truck.—James D. Blount, Town Engineer.

### *Fargo, N. Dak.*

The city of Fargo, population 28,619, awards an annual contract to one individual for the collection of garbage throughout the city. The contractor uses four 1½-ton trucks with box bodies for collection. Garbage and refuse are disposed of on the same dump by burning on the edge of the dump, which is located about 2 miles from the city. Sufficient refuse comes out to practically consume the garbage. Hotel and restaurant garbage is fed to hogs privately by the contractor.—W. P. Tarbell, City Engineer.

### *Columbus, Ohio*

Municipal collection is in force in Columbus, population 290,564, the city using three 3-ton motor trucks, forty-two 5-yard trailers and four 7-ton tractor trucks for collection. The garbage is disposed of by reduction.—Smith L. Myers, Sanitary Department.

### *Fremont, Ohio.*

The city of Fremont, population 13,422, collects the garbage with one truck having a 3-ton body and disposes of it in the municipal incinerator.—M. J. Ahner, Safety-Service Director.

### *Ironton, Ohio*

In Ironton, population 16,621, the city collects all the garbage, using two 1½-ton motor trucks. The garbage is disposed of in the municipal incinerator.—Leonard G. Howell, City Manager.

### *Parma, Ohio*

Two 1½-ton motor trucks are used by the city of Parma, population 13,899, for the collection of garbage, which is sold under contract to the highest bidder and is used for feeding hogs.—George Parker, Street Commissioner.

### *Springfield, Ohio*

Four 1½-ton wagons and one 3-ton and two 2-ton motor trucks are used by the city of Springfield, population 68,743, for the collection of garbage within the corporate limits. The garbage is disposed of by feeding to hogs.—George H. Miller, Sanitary Inspector.

### *Toledo, Ohio*

Fifteen motor trucks which handle an average load of 2 tons and sixteen trailers carrying an average load of 3 tons are used by the city of Toledo, population 290,718, for the collection of garbage throughout the city. All garbage is disposed of in the municipal incinerator.—O. E. Kelley, Chief Clerk, Division of Streets.

### *Youngstown, Ohio*

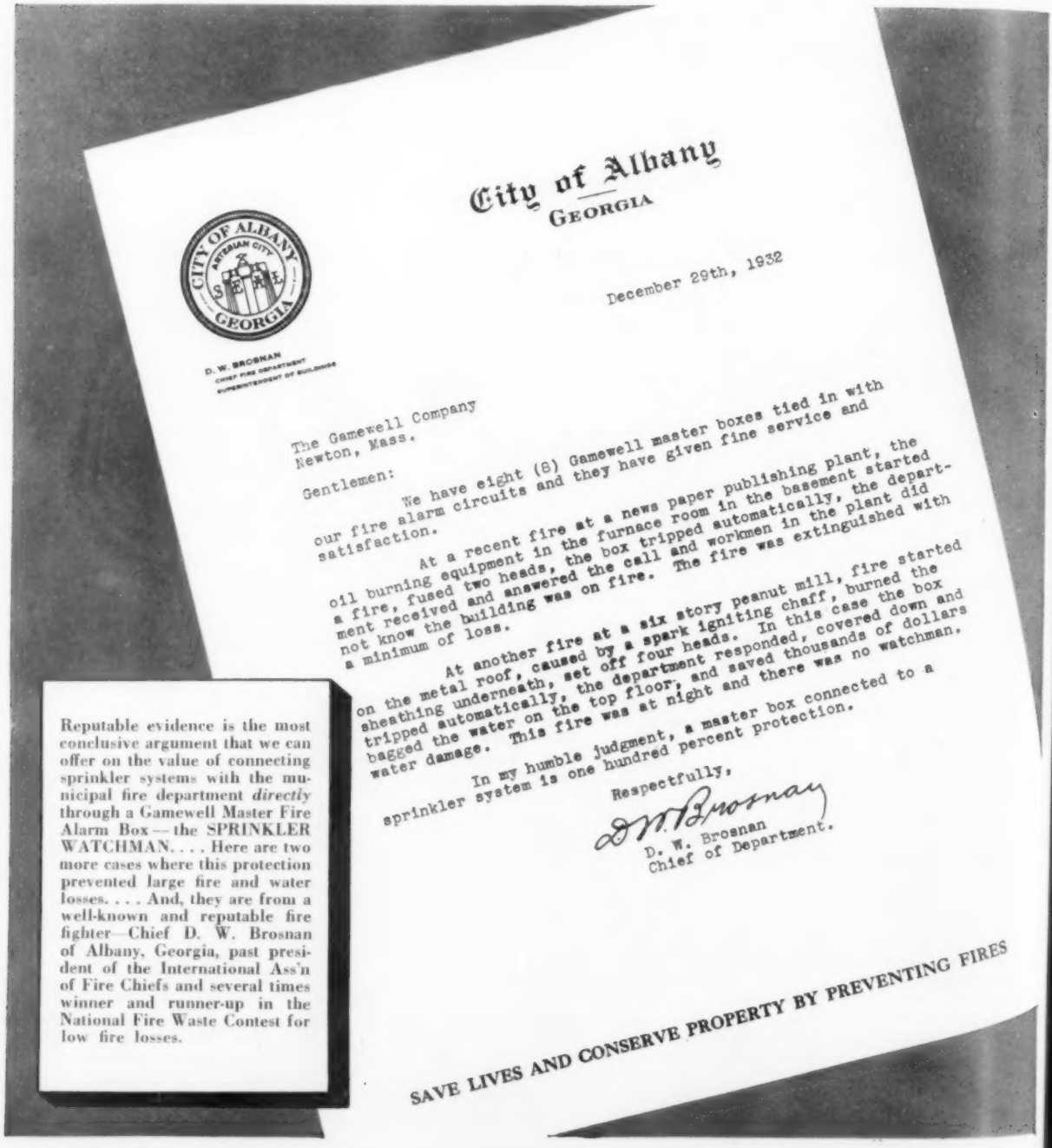
A three-year contract for the collection of garbage was awarded by the city of Youngstown, population 170,004, at the rate of $2.74 per ton. The contractor uses ten motor trucks for collection. The contract for disposal was awarded for the period of three years at the rate of $2.19 per ton. The garbage is weighed on municipally owned scales operated by municipal employees. Disposal is by burning at the Nye municipal incinerator, which is municipally owned but at present operated and maintained by contract. The total cost for garbage collection, disposal and weighing amounts to approximately $5.05 per ton.—C. H. Beight, M.D., Commissioner of Health.

### *Oklahoma City, Okla.*

The city of Oklahoma City, population 185,389, collects the garbage throughout the city with twenty-two 3- to 3½-ton motor trucks. The garbage is disposed of on dumps by feeding to hogs. Any garbage left over from the hog feeding is burned and then rolled.—Leo Menten, Superintendent of Garbage.

# INSTANT ALARM!

***Chief Brosnan cites 2 more cases proving the value of* CONNECTING SPRINKLER SYSTEMS TO MASTER FIRE ALARM BOXES . . .**



City of Albany
GEORGIA

CITY OF ALBANY GEORGIA SEAL

D. W. BROSNAN
CHIEF FIRE DEPARTMENT
SUPERINTENDENT OF BUILDINGS

December 29th, 1932

The Gamewell Company
Newton, Mass.

Gentlemen:

We have eight (8) Gamewell master boxes tied in with our fire alarm circuits and they have given fine service and satisfaction.

At a recent fire at a news paper publishing plant, the oil burning equipment in the furnace room in the basement started a fire, fused two heads, the box tripped automatically, the department received and answered the call and workmen in the plant did not know the building was on fire. The fire was extinguished with a minimum of loss.

At another fire at a six story peanut mill, fire started on the metal roof, caused by a spark igniting chaff, burned the sheathing underneath, set off four heads. In this case the box tripped automatically, the department responded, covered down and bagged the water on the top floor, and saved thousands of dollars water damage. This fire was at night and there was no watchman.

In my humble judgment, a master box connected to a sprinkler system is one hundred percent protection.

Respectfully,

D. W. Brosnan

D. W. Brosnan
Chief of Department.

**Reputable evidence is the most conclusive argument that we can offer on the value of connecting sprinkler systems with the municipal fire department *directly* through a Gamewell Master Fire Alarm Box — the SPRINKLER WATCHMAN. . . . Here are two more cases where this protection prevented large fire and water losses. . . . And, they are from a well-known and reputable fire fighter—Chief D. W. Brosnan of Albany, Georgia, past president of the International Ass'n of Fire Chiefs and several times winner and runner-up in the National Fire Waste Contest for low fire losses.**

**SAVE LIVES AND CONSERVE PROPERTY BY PREVENTING FIRES**

## THE GAMEWELL COMPANY
NEWTON, MASSACHUSETTS

# Fire—Police—Safety Items

**of Interest to Departments of Public Safety**

## *Winning Cities in Fire Waste Contest*

THE grand award in the 1932 Inter-Chamber Fire Waste Contest goes to Philadelphia, Pa., according to an announcement made on April 7 at a meeting of the National Fire Waste Council, which sponsors the contest jointly with the Chamber of Commerce of the United States.

The list of winners follows:

Class I, cities of more than 500,000 population, PHILADELPHIA, PA.

Class II, 250,000 to 500,000 population, CINCINNATI, OHIO.

Class III, 100,000 to 250,000 population, GRAND RAPIDS, MICH.

Class IV, 50,000 to 100,000 population, LAKEWOOD, OHIO.

Class V, 20,000 to 50,000 population, ELYRIA, OHIO.

Class VI, under 20,000 population, ALBANY, GA.

Philadelphia receives its award at the Annual Meeting of the Chamber of Commerce of the United States in Washington this month, as having made the best year's record in checking fire waste and in promoting fire prevention activities of the 332 cities in the contest. The other winners in the various population groups will be presented with awards at the same time.

The 1932 contest made an exceptionally good record in the reduction of fire losses, the per capita loss of the competing cities having been $1.88, the lowest in the history of the contest. This represents a saving to the 35,000,000 inhabitants of these cities of $20,000,000 under the 1931 figures. Their total loss last year was $65,254,000, as against an average of $85,654,000 in the five-year period [illegible].

A number of cities which received honorable mention are listed below in the order of their rating.

*Class I.*—Milwaukee, Wis.; Detroit, Mich.; Pittsburgh, Pa.; St. Louis, Mo.; Queens Borough (of New York City).

*Class II.*—Rochester, N. Y.; Providence, R. I.; Indianapolis, Ind.; Portland, Ore.; New Orleans, La.; Washington, D. C.; Kansas City, Mo.; St. Paul, Minn.; Toledo, Ohio; Louisville, Ky.

*Class III.*—Hartford, Conn.; Canton, Ohio; Honolulu, Hawaii; Wichita, Kans.; El Paso, Texas; San Antonio, Texas; Long Beach, Calif.; Evansville, Ind.; Youngstown, Ohio; Fort Wayne, Ind.

*Class IV.*—Asheville, N. C.; Lansing, Mich.; Topeka, Kans.; Pasadena, Calif.; Fresno, Calif.; Bethlehem, Pa.; Austin, Texas; Durham, N. C.; Savannah, Ga.; Evanston, Ill.

*Class V.*—Owensboro, Ky.; Moline, Ill.; Newburgh, N. Y.; Norristown, Pa.; Mason City, Iowa; Lebanon, Pa.; Muskegon, Mich.; Maplewood, N. J.; Battle Creek, Mich.; Mishawaka, Ind.

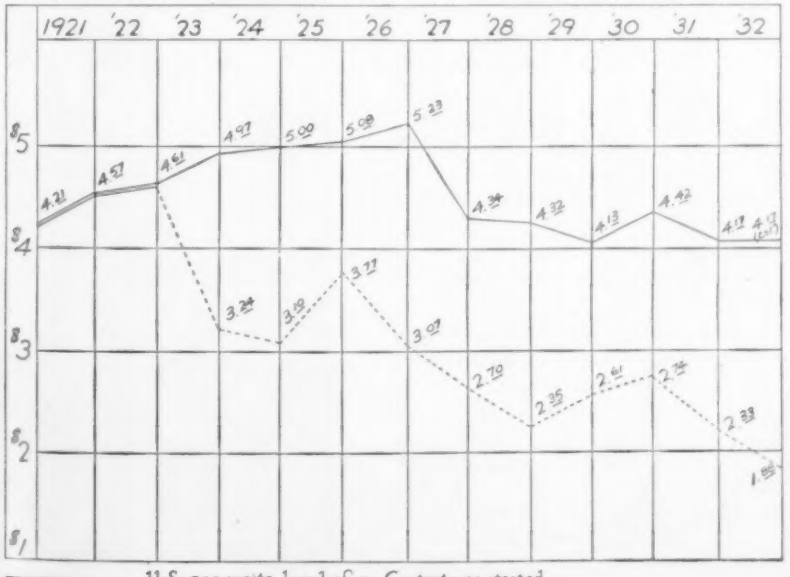
*Class VI.*—Valley City, N. Dak.; Fremont, Mich.; Hanover, Pa.; Pottstown, Pa.; Hastings, Nebr.; Pekin, Ill.; Colfax, Wash.; Perryton, Texas; Cynthiana, Ky.; Bluefield, W. Va.

## *Fewer Street Accidents to Children*

THE Police Department of New York City reports, in the April issue of its publication entitled *Street Accidents*, that child fatalities from street accidents in that city in March—11 in number—were the fewest for any March in the last eleven years. The injuries, totaling 1,884, were the fewest in the last ten years. For the first quarter of 1933 the number of children killed in street accidents was 28 per cent less than in the first quarter of 1932, and injuries were 11 per cent less.

An analysis of causes of accidents to children in the streets, as made by Deputy Inspector John J. O'Connell, appears in the same issue. It shows that the principal cause of such accidents was crossing the street elsewhere than at crossings. In the last four years there has been a decrease of 42 deaths from that cause. The number in 1932 was 56. The second leading cause was running off the sidewalk into the roadway, this accounting for 42 deaths in 1932, 56 in 1931, and a total of 200 in four years. Playing games in the roadway was responsible for 115 child fatalities in four years; the 20 from this cause in 1932 is thus a reduction. Stealing rides on vehicles is responsible for increased accidents, however, as is also the act of coming from behind parked vehicles. Crossing against traffic lights, while the leading cause of street accidents to adults in 1932, ranked fifth in the case of children.

Ten year record of cities entered in Inter-Chamber Fire Waste Contest



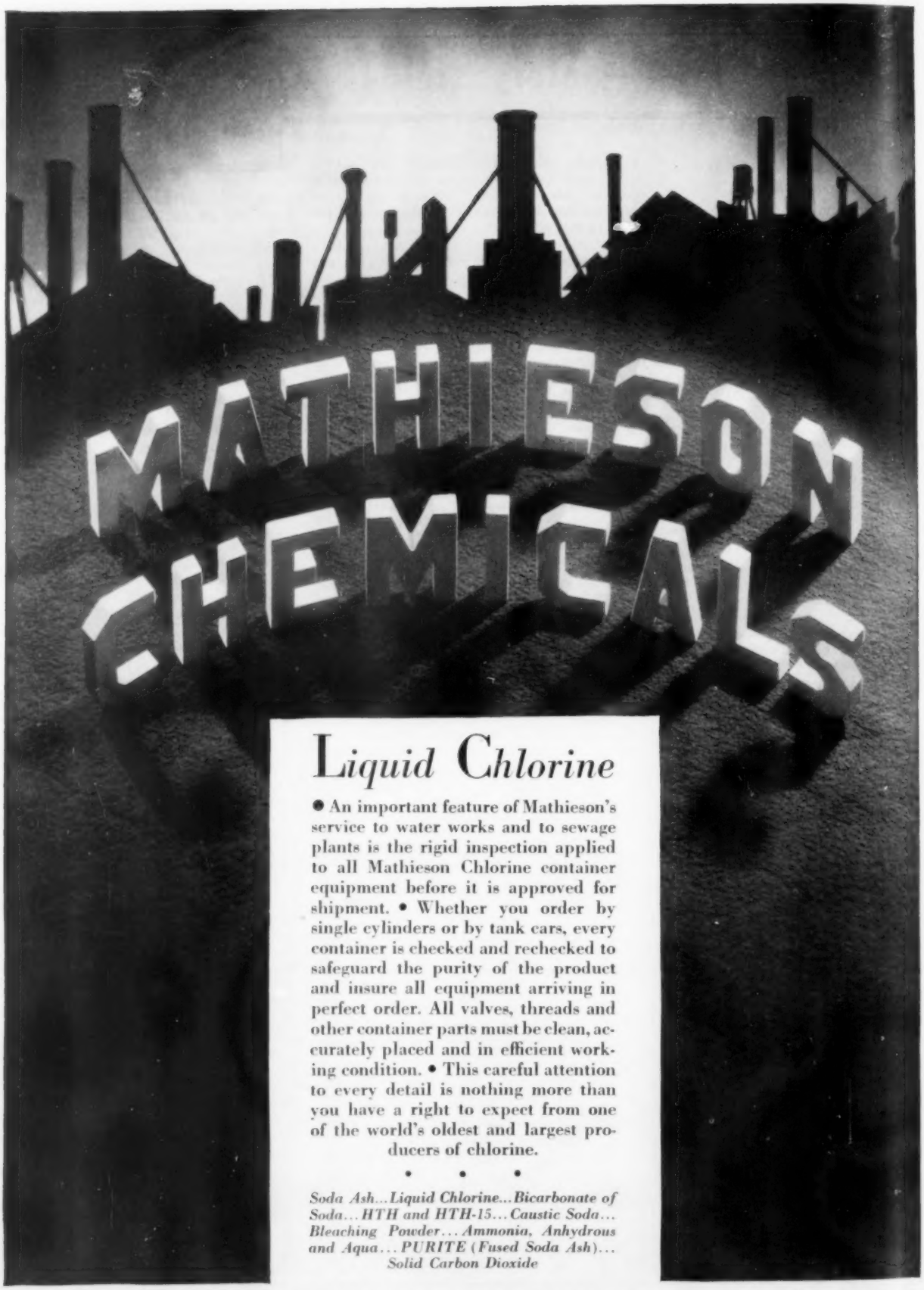

## *A Hazardous Scheme for Safety*

SOMEBODY has persuaded New Jersey officials to use one of the causes of automobile accidents to prevent automobile accidents. Five hundred "safety" posters are to be displayed on billboards along Jersey highways. An association of billboard owners has given the space to the state, and each of the posters will be signed by the Commissioner of Vehicles.

The design of these billboard safety messages is described as "striking and even gruesome." Their use is opposed in a statement issued by the National Council for Protection of Roadside Beauty, which says: "The menace of the roadside billboard through distraction of attention, as well as through obstruction of vision, is no mere clubwomen's notion. The National Automobile Chamber of Commerce has declared that billboards, by distracting the attention of drivers, may be a contributing cause to accidents."

If these proposed safety billboard posters are used only on congested streets of towns, they will not mar the beauty of the scenery. But they may still be a potential cause of collisions on the streets if they obstruct the vision of drivers. There are less objectionable ways of presenting a striking safety message to motorists. New Jersey's official sanction of distracting roadside signs will weaken the fight of the state's civic organizations against the billboard blight.

—Editorial in New York *Sun*, April 18, 1933.




# *Liquid Chlorine*

**• An important feature of Mathieson's service to water works and to sewage plants is the rigid inspection applied to all Mathieson Chlorine container equipment before it is approved for shipment. • Whether you order by single cylinders or by tank cars, every container is checked and rechecked to safeguard the purity of the product and insure all equipment arriving in perfect order. All valves, threads and other container parts must be clean, accurately placed and in efficient working condition. • This careful attention to every detail is nothing more than you have a right to expect from one of the world's oldest and largest producers of chlorine.**

• • •

***Soda Ash...Liquid Chlorine...Bicarbonate of Soda...HTH and HTH-15...Caustic Soda... Bleaching Powder...Ammonia, Anhydrous and Aqua...PURITE (Fused Soda Ash)... Solid Carbon Dioxide***

***The* MATHIESON ALKALI WORKS (*Inc.*), 250 PARK AVENUE, NEW YORK, N. Y.**

THE AMERICAN CITY should always be mentioned when writing for this material which is furnished free.

# AN UP-TO-DATE CATALOG FILE *Is Informative*

Keep your files up to date by checking over these items each month and writing for those you need.

### GETTING THE MOST FROM STREET LIGHTING

**380.** The protective value of street lighting depends upon the effective use of illumination to produce adequate visibility. Street-lighting problems require the skilled services of street-lighting specialists. The General Illumination Engineering Co., Carew Tower, Cincinnati, Ohio, is prepared to furnish impartial service and will be glad to provide a program which will increase the benefits of your street-lighting appropriation.

### A STURDY NEW 2-TON TRUCK

**381.** International Harvester Co. of America, Inc., 606 S. Michigan Ave., Chicago, Ill., has announced its new model B-4 2-ton truck with a new 6-cylinder engine developing 63 brake horsepower at 3,200 rpm. A complete description of this truck with its well-designed, well-engineered construction throughout may be secured direct from the manufacturer.

### MULTI-CYLINDER DIESEL ENGINES

**382.** Superior diesel stationary engines from 3 to 8 cylinders operating at 275 to 450 rpm and furnishing 145 to 630 horsepower, and engines from 4 to 8 cylinders operating at 275 to 400 rpm, furnishing 310 to 900 horsepower, are described in Bulletin No. 128 issued by the Superior Engine Co., Springfield, Ohio.

### DEEP-WELL TURBINE PUMPS

**383.** Bulletin No. 336 recently issued by Byron Jackson Co., foot of Carlton St., Berkeley, Calif., contains 32 illustrated pages describing Byron Jackson deep-well turbine pumps with capacities from 1 to 8,000 gallons per minute.

### FLOODLIGHTING EQUIPMENT

**384.** A 52-page publication entitled "Westinghouse Floodlighting Equipment" has recently been announced by the Advertising Department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. There are illustrations of many recent and unusual floodlighting installations, together with a photograph and description of every type of floodlighting equipment manufactured by Westinghouse.

### A NEW AUTO PATROL POWER GRADER

**385.** The new Caterpillar Auto-Patrol No. 11, weighing 14,350 pounds and designed for heavy maintenance work, is described in detail in Bulletin 1777 published by the Caterpillar Tractor Co., Peoria, Ill.

### AUTOMOBILES FOR CITY OFFICIALS

**386.** Information regarding Chrevrolet coupés and coaches, the lowest first cost motor car for municipal officials, with low operating cost and six-cylinder service capable of better than 40 miles an hour in silent second, 70 miles an hour in high, may be secured from Norman K. Haig, care Chevrolet Motor Co., Detroit, Mich. Data on Chevrolet trucks will also be furnished on request.

### VISIBLE CONTROL CHLORINATORS

**387.** Technical Publication 38 issued by Wallace & Tiernan Co., Inc., Newark, N. J., describes the line of W & T visible control vacuum chlorinators, which have all the working parts under the glass bell in plain sight.

### SAFEGUARDING WATER PRESSURE

**388.** A booklet, "What is the Difference," which takes seven minutes to read, will tell you all about engines for stand-by service, about Sterling engines which safeguard the precious water supply which is invaluable for fire duty and necessary for domestic use. Ask the Sterling Engine Co., Dept. C-11, 1270 Niagara St., Buffalo, N. Y., for a copy.

### A THREE-TONE FIRE-ALARM WHISTLE

**389.** The triple combination three-tone Federal whistle, a low-pressure air whistle which will operate from any existing fire-alarm system, has no moving parts and is guaranteed for 10,000 hours of continuous blowing, is described completely in Bulletin 38 which may be secured from the Federal Electric Co., 8701 S. State St., Chicago, Ill.

### WATER AND SEWAGE PUMPS

**390.** Morris pumps, which are characterized by high efficiency, sturdy construction, and Morris screw pumps which have demonstrated efficiencies as high as 92 per cent in municipal and industrial plant installations and which are reasonably priced, are made by the Morris Machine Works, Baldwinsville, N. Y., which will be pleased to quote for your pumping requirements and furnish complete data.

### A VALUABLE TRAFFIC EQUIPMENT CATALOG

**391.** The new TEC traffic equipment catalog which is just off the press is fully illustrated and contains many valuable computing charts for highway traffic officials. A free copy may be secured by writing to the Traffic Equipment Corp., 439 W. 42nd St., New York.

### KEEP UNDESIRABLES OUT

**392.** Unprotected public property is easy prey for mischief-makers, tramps, thieves and other undesirables. They may be kept out by enclosing public works with Pittsburgh Chain-Link fence, made of rust-resisting, copper-bearing steel, heavily zinc-coated after weaving, and erected on a sturdy frame of seamless steel pipe terminal posts and top rail and solid steel H section line posts. Complete information may be secured from the Pittsburgh Steel Co., 720 Union Trust Bldg., Pittsburgh, Pa.

### PUTTING-GREEN MAINTENANCE

**393.** A booklet entitled "Putting-Green Maintenance by Modern Methods" has been published by Jacobsen Mfg. Co., Racine, Wis., and features the Jacobsen power putting-green mowers, with attachments. This booklet is well illustrated.

### A SPREADER WITH NO MOVING PARTS

**394.** The Best spreader, which handles sand, slag, salt, calcium chloride, chips, gravel, cinders and stone, is low in initial cost, has no moving parts, is very easily handled by two men, and is easily transported and stored and quickly attached in two minutes, spreads material uniformly to a width of 9 feet, has an unobstructed gravity flow. It is described in literature which may be secured from D. C. Elphinstone, Inc., 115 S. Calvert St., Baltimore, Md.

### A NEW BUILDING MATERIAL

**395.** National Facade block, a new building material which is low in first cost, low in maintenance, and fireproof, with no unsightly mortar joints, and has a smooth interior finish, is described in detail in literature which may be secured from the National Facade Corp., 730 Park Bldg., Pittsburgh, Pa.

### ROTARY CONTROL FOR ELEVATED TANKS

**396.** The Roto-Trol, a rotary control which automatically controls high and low water in elevated tanks and which is as accurate as a springless scale and not affected by starting surges, is described in Bulletin R-1 issued by the Water Levels Controls Co., 765 Hampden Ave., St. Paul, Minn.

### THREE-STAGE VOLUTE PUMPS

**397.** Worthington centrifugal pumps of the three-stage volute type and designated as Type UF are described and illustrated in a specification sheet W-318-S6, which may be secured from the Worthington Pump and Machinery Corp., Harrison, N. J.

### SIMPLICITY IN ASPHALT PRESSURE DISTRIBUTORS

**398.** Distributor Catalog H-14 recently issued by Littleford Bros., 500 E. Pearl St., Cincinnati, Ohio, describes the operation and construction of the Littleford pressure distributor and tells the secrets of the hand-wheel which controls circulation and spraying.

### A TRAILER FOR HAULING HEAVY EQUIPMENT

**399.** A new trailer with tandem axles, pneumatic tires and 8 feet overall width, which gives proper distribution of weight, making possible the handling of loads up to 30 tons on pneumatic tires, and any capacity on solid tires, is described in the literature of C. R. Jahn Co., 165 W. Wacker Drive, Chicago, Ill.

### THE MAINTENANCE OF ASPHALT PAVEMENTS

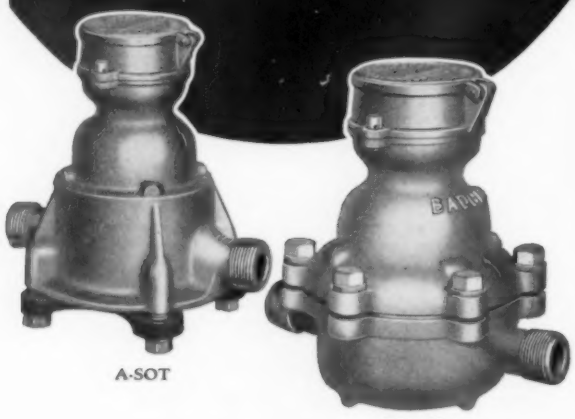
**400.** The use of Bitumuls, a cold asphaltic emulsion binder for the maintenance of paved surfaces, is described and illustrated in a very complete publication of the American Bitumuls Co., Dept. 4, 200 Bush St., San Francisco, Calif., listed as Bulletin No. 2.

### INFORMATION REGARDING CULVERT METAL

**401.** Form 114 issued by Republic Steel Corp., Republic Bldg., Youngstown, Ohio, discusses the property of Toncan iron, which is recommended particularly for its resistance to rust in all cases where a ferrous metal is used. Toncan metal is used particularly for pipe and for corrugated culverts.

***If instead of writing direct to the manufacturer for these catalogs you prefer to send a list of the numbers you desire, to THE AMERICAN CITY, we will secure them for you.***

INCREASE YOUR REVENUE! HOLD DOWN COSTS




A-SOT SC-SOT

**A sure and definite way to increase revenue is to install more water meters . . . Make your program 100% for the maximum return . . . and select Badger Meters for steady, dependable performance.**

**The Badger is designed practically, with simplicity its keynote. It embraces the highest of quality materials molded into few working parts . . . These parts are assembled in units which are readily accessible should service be necessary... Consequently, maintenance costs are held down to a minimum.**

**Let us give you detailed information concerning the Badger Meters shown above. Write for complete catalog.**

**BADGER METER MANUFACTURING CO.**
**MILWAUKEE WISCONSIN**

*Branches in*

New York City, Chicago, Ill., Waco, Texas, Seattle, Wash., Cincinnati, O., Kansas City, Mo., Savannah, Ga., Los Angeles, Cal., Philadelphia, Pa.

BADGER Water METERS


# An Up-to-Date Catalog File

*(Continued from page 21)*

### VALVES FOR WATER WORKS

**402.** Bulletin No. 20 issued by The Chapman Valve Mfg. Co., Indian Orchard, Mass., contains a description of standard water-works gate valves complying with the specifications of the American Water Works Association, and illustrated details of this typical Chapman product.

### A LOW-COST REFUSE COLLECTION AND HAULAGE SYSTEM

**403.** The Fruehauf haulage system for the low-cost collection of garbage, ashes, snow and other municipal waste materials, is described in an 8-page illustrated folder which may be secured from the Fruehauf Trailer Co., Harper Ave., Detroit, Mich.

### ACTIVATED CARBON THE MODERN PURIFIER

**404.** The Industrial Chemical Sales Co., Inc., 230 Park Ave., New York, has published a 43-page booklet, "Activated Carbon the Modern Purifier," which describes the origin and characteristics of activated carbon, its use in industry and its application to various problems, including the removal of taste and odor from water.

### A NEW DRY CHEMICAL FEEDER FOR WATER WORKS

**405.** Bulletin 95 issued by the International Filter Co., 59 E. Van Buren St., Chicago, Ill., describes the new No. 8 Infilco dry chemical feeder, which is dustless, and accurate within 5 per cent on five-minute samples, and will consistently handle a fraction of a pound per hour up to as much as 150 pounds per hour.

### A FILTER SAND WASHER

**406.** The Robertson sand cleaner, which reclaims filter sand, removing 95 per cent of the encrustants at a loss of less than 1 per cent of the sand, is described and illustrated completely in Bulletin 55 which may be secured from the Simplex Valve & Meter Co., 6743 Upland St., Philadelphia, Pa.

### PROPORTIONAL TREATMENT OF WATER

**407.** Tret-O-Units, which measure proportional quantities of chemicals for the treatment of water, depending upon the rate of flow of the water itself, and which are readily adjustable for minimum to maximum capacity in small increments, making the application of chemicals to water accurate and in exactly the proper ratio, are described in the literature of Proportioneers, Inc., 737 N. Michigan Blvd., Chicago, Ill.

### UNEMPLOYMENT RELIEF BY MAKING WATER OR SEWER PIPE LOCALLY

**408.** The Lock Joint Pipe Co., Ampere, N. J., will be glad to send full particulars relative to their plan for enabling you to spend 75 per cent of the cost of your pipe lines for local labor and material. Immediate benefit for your unemployed will arise from the manufacture of the pipe right in your own community.

### A NEW 12-FOOT LEANING-WHEEL BLADE GRADER

**409.** The Austin-Western Road Machinery Co., 400 N. Michigan Ave., Chicago, Ill., will be pleased to furnish complete information regarding the new Austin No. 12 grader, a super-rigged unit with a 12-foot blade, cutting 18 inches below ground level and with a high reach of 7 feet 10 inches, and complete with hydraulic power control for fast, smooth and easy control for leaning the wheels, shifting the rear axle, and operating the blade, pole steer and scarifier.

### SEWAGE DISPOSAL EQUIPMENT

**410.** The Jeffrey Mfg. Co., 970-99 N. Fourth St., Columbus, Ohio, will be pleased to supply municipal officials with complete information regarding Jeffrey sewage installations, through its Bulletin No. 545, which describes some of the proved equipment offered by Jeffrey, such as self-cleaning bar screens, grit conveyors, sludge collectors, shredders, etc.

### A SPRINKLER ALARM FOR WET SYSTEMS

**411.** The Rockwood Sprinkler Co., Worcester, Mass., a subsidiary of the Gamewell Co., Newton, Mass., has issued a bulletin on a new Sprinklarm unit which is used in connecting wet pipe sprinkler systems with the fire department through a Gamewell Master Type fire-alarm box. This unit represents one of the most important advancements in the automatic sprinkler field in a number of years.

### A 1933 STREAMLINE TRUCK TIRE

**412.** General Tire & Rubber Co., Akron, Ohio, has announced the 1933 General streamline Jumbo balloon tire, which differs radically from all types of conventional super-balloon or "doughnut" tires. Its shape is pyramidal, its sidewalks straight, tapering from a tread no wider than that of the ordinary balloon tire to a base wider than any other part of the tire. The advantages of this type of tire in parking and steering and absorbing road shock are told in literature which may be secured from General.

# An Up-to-Date Catalog File

(See also pages 21 and 22)

### PORTABLE PUBLIC ADDRESS SYSTEM

413. The RCA Victor Co., Inc., Engineering Products Div., Camden, N. J., has recently published an 8-page illustrated booklet on the RCA Victor portable public address system Type PG-62, which consists of a microphone, an amplifier and two loud-speakers, all compactly housed in a rugged carrying case of moderate dimensions. The equipment and controls are so designed that the system may be safely handled and operated by the ordinary layman.

### MANHOLE, METER BOX AND DRAINAGE CASTINGS

414. In Red Book No. 7 the Canton Foundry & Machine Co., Canton, Ohio, describes and lists its complete line of sidewalk doors, coal-hole covers, area gratings, gutter boxes, valve and drain covers, water-meter covers, lamp-hole covers, catch-basin covers, and manhole covers.

### THE BUSINESS BASIS OF METERED WATER

415. A 48-page pamphlet has been published by the Water Meter Institute, 1427 Eye St., N. W., Washington, D. C., discussing the metering of water services pro and con, giving a condensed history of water meterization in 52 American cities, a number of letters from meter users, and other information of real value to water departments.

### POPULAR 10-FOOT GRADERS

416. Allis-Chalmers Mfg. Co., Milwaukee, Wis., will be pleased to furnish complete information on its heavy 10-foot graders, which have led all other sizes of tractor-drawn graders in the number of units sold. This rugged machine is a conventional hand-controlled leaning-wheel grader with special features and is particularly adapted for use with the A-C K "35" tractor.

### A NEW STREET AND HIGHWAY REPAIR TRUCK

417. A portable repair truck for bituminous roads and streets, which makes any mix for hot or cold laying and contains material dryer, pug mixer, loader, tar kettle, oil burners, and measuring devices, and is known as the White Highway Repair Truck Model L-1 using local material for paving repairs, is described in Circular No. 23 issued by the White Mfg. Co., Elkhart, Ind.

### DIESEL ENGINES FOR MUNICIPAL POWER

418. Nordberg Mfg. Co., Milwaukee, Wis., has issued a new Nordberg diesel engine Bulletin, No. 50, which describes the new 8-cylinder Nordberg engines up to 3,000 horsepower.

### A NEW BITUMINOUS MIXER

419. A 4-page illustrated bulletin has just been issued by the Kwik-Mix Division, National Equipment Corp., N. 30th St. and W. Concordia Ave., Milwaukee, Wis., describing the new Kwik-Mix bituminous mixer, built in two sizes and permitting the indirect application of heat by means of a shell around the drum to prevent burning and to insure a clean drum.

### CART TYPE BITUMINOUS DISTRIBUTOR

420. A cart type bituminous distributor for attaching to tank trucks for the application of road oil, cutback and emulsion, which can be steered to offset it 6 feet laterally, permitting work on shoulders where heavy trucks cannot operate, and which has other special features, is described in a circular which may be secured from the Rosco Mfg. Co., 928 S. Fourth St., Minneapolis, Minn.

### WATER-WORKS TOOLS

421. A recent circular, ZP-33, issued by H. W. Clark Co., Mattoon, Ill., illustrates and describes a number of water-works tools of particular interest at this time, including the Klinck test and puddle plug, a copper pipe bending machine, a pressure controller for use in repairing leaks in pipe, a pipe pusher, a pipe cutter, pipe clamp, meter coupling wrenches, hand tampers, inspectors' sets for locating leaks and waste in water distribution systems, and valve box finders.

### A WORTH-WHILE ROAD BOOK

422. Forty-eight pages of road information in the form of tables giving the quantity of bituminous material required per mile at various rates of application, the linear feet covered by various tank capacities, quantity of material per square yard, approximate weight per cubic yard, conversion tables, and other highway quantities, are included in the Barrett Road Book issued by The Barrett Co., 40 Rector St., New York, which can be secured by any highway officials or contractors free on request.

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***If instead of writing direct to the manufacturer for these catalogs you prefer to send a list of the numbers you desire to THE AMERICAN CITY, we will secure them for you.***


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THE CHAPMAN NON-SLAM CHECK VALVE is new and radically different in design and construction. It does not slam and cuts head loss to approximately one-fourth of that caused by the ordinary type of check valve. It practically eliminates wear of parts, operates equally well in a vertical or horizontal position and closes drop tight.

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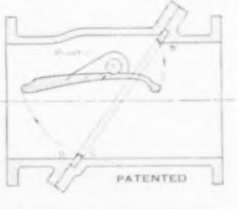
Many important features are incorporated in the new Chapman Non-Slam Check Valves. They are fully described in a booklet that we shall be glad to send you. Write for it.




The disc, balanced and supported on bearings, moves through a short arc, closes quickly

THE CHAPMAN VALVE MANUFACTURING CO.
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# KENNEDY

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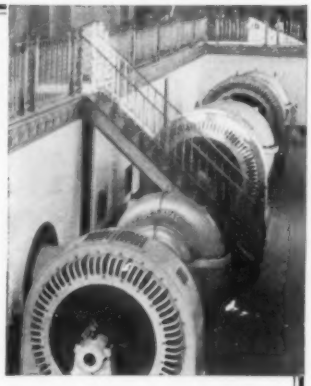
De Laval Pump shows 88.0% overall efficiency on acceptance test



Three De Laval motor driven centrifugal pumps of the following ratings are installed in the Vernon automatic pumping station of the City of Baltimore:

22,400 g.p.m. against 150 ft. head at 720 r.p.m.
30,500 g.p.m. against 155 ft. head at 600 r.p.m.
38,000 g.p.m. against 160 ft. head at 600 r.p.m.

On the official acceptance test, run solely by the expert city testing crew and using testing methods and instruments of the greatest known accuracy, the largest unit showed an overall *efficiency, including motor, of* 88.0%, and the smallest unit showed an overall efficiency of 86.14%. A substantial bonus was earned on all three pumps.

*During the past* 11 *years the City of Baltimore has installed ten De Laval pumps of an aggregate capacity of* 200,000,000 *gallons per day.*

**De Laval Steam Turbine Co.**
**Trenton, New Jersey**

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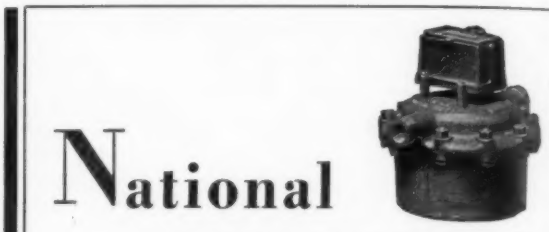

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RATES REVENUES and RESULTS of municipal ownership of water works in the U. S.

THIS new 60-page booklet by R. E. McDonnell is arousing great interest among water works men throughout the country. It is full of facts and figures, graphs and other illustrations giving the history and results of municipal ownership of water works. The figures include: cost of water delivered to the consumer in 250 cities having municipal plants (grouped according to population); also in 25 cities with privately owned water works; total revenues, operating expenses, depreciation and net profits of 100 municipal water plants; total number water works systems and their ownership; statistics on water purification, water softening, hydrant rentals; and special studies of municipal ownership in Omaha and Milwaukee.

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MAY, 1933

Vol. XLVIII, No. 5

The American City

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# When Federal Funds Are Voted, Will Local Plans Be Ready?

*"Roosevelt Speeds Colossal Program of Public Works—White House Conference Gets Draft of Bill—May Total $2,000,000,000 in Year"*

CONFIDENTIAL statements to THE AMERICAN CITY from Washington observers, and newspaper reports such as that appearing under the heading here quoted from the *New York Times* of April 30, give reason to hope that the Administration will announce very soon its program for liberalizing the Reconstruction Finance Corporation Act and for launching a really courageous program of public works—national, state and local—with Federal aid. Perhaps the news will be released before this issue of THE AMERICAN CITY reaches its readers.

### Only 23 Millions Out of 2,260 Millions of R. F. C. Cash Has Gone to Public Works

The importance of making R. F. C. funds much more readily available for local public works is indicated by the fact that up to the close of business on April 22, although the Federal Government has made cash advances of $2,260,021,958.92 through the R. F. C., the financing of self-liquidating construction projects accounted for just about 1 per cent of this amount. The report from which these figures are taken (made public by the R. F. C. on May 1) explains that, although the Corporation had agreed to advance $198,623,788.60 to aid in financing construction of 109 self-liquidating projects, $862,784.37 of this had been canceled or withdrawn, $174,761,004.23 remained to the credit of borrowers, and $23,000,000 had been advanced in cash. In the case of other commitments of the Corporation to finance construction of self-liquidating projects the purchase of bonds is awaiting request by the borrowers, the working-out of legal details, the taking by applicants of action necessary to authorize issuance of their bonds, and similar prerequisites to actual advancement of funds.

### Urgent Need for Construction for Unemployment Relief

Some indication of the need for new construction activities throughout the United States, and of the planning already done to meet that need, may be gained from certain figures released by, or submitted to, the authorities in Washington during the last month:

A tabulation of estimated construction, private and public, released by the Federal Employment Stabilization Board, shows that although the 1930 total of $10,108,000,000 was much below the previous peak, this total had dropped to $4,428,000,000 in 1932. Here is a shrinkage of more than $5,500,000,000 in the annual buying power of the construction industry alone, which must obviously be restored before prosperity can be fully recovered.

This serious shrinkage has been mainly due, of course, not to lack of plans for needed projects, but to lack of local funds with which to finance them. At a recent conference held in Washington under the auspices of Secretary of Labor Frances Perkins, there was presented a detailed list, prepared by the National Committee for Trade Recovery, of more than two and one-half billion dollars' worth of planned public improvements which have been delayed or abandoned because of the depression, and which are reported to constitute only a small part of the deferred public works throughout the country. The list comprises more than 2,700 projects, such as water works, roads, bridges, sanitation, grade-crossing separation, schools, hospitals and low-cost housing and slum clearance, which the Trade Recovery Committee believes should go forward immediately.

### Local Leadership and Cooperation Essential

While this magazine has consistently advocated, for thirty months past, substantial expenditures by the Federal Government for public works, it may not be amiss, with a favorable decision now apparently imminent, to sound a note of warning against the growing tendency to lean too heavily on the paternal bosom. Present inaction by the local governments of the United States in the financing of needed municipal and county improvements is due in many cases to lack of inclination, rather than to lack of potential ability to provide the funds. If every city would do its share in the prompt planning and carrying-out of employment-giving projects—and would invoke Federal aid only if taxing or borrowing capacity is temporarily exhausted—the local and cumulative effects would both be very beneficial.

GRAND CENTRAL PARKWAY, BOROUGH OF QUEENS, NEW YORK CITY

The 188th Street crossing is just out of sight behind the knoll in the background. Two service roads are shown, separated from the express road by plots to be landscaped. Access drives are being built

# Varying Treatment of Arterial Parkways

## *How the Problem within Urban Limits Differs from That in More Open Areas*

*By* **CHARLES U. POWELL**
**Engineer-in Charge, Queens Topographical Bureau, New York City**

SINCE it has become an axiom of arterial parkway and speed highway design that complete grade separation is desirable at all crossings, many methods of treatment of these crossings and of the contiguous areas have been developed. Where the parkway runs through open country the problem is simplest. Where it traverses rapidly growing sections of a large city the matter becomes more involved.

Always the question of cost enters. Just at present that is one of the dominant deterrents to a large extension of parkway systems in many localities. For the purpose of this discussion, however, that ever pressing matter of finance will be disregarded. We are concerned here merely with the physical aspects of the problem, including the best means of best serving the most people.

### Points of Divergence

One of the chief points of divergence between the distinctive parkway design for settled areas and that for the wide spaces lies in the way it is to be developed for use of residents along its line. In sparsely built districts the cross-roads, intersecting the parkway at intervals of a half-mile or (usually) more, afford ready means of access for pleasure cars. Business traffic—trucks, delivery wagons and the like—run on existing country roads which roughly parallel the parkway (often at some distance), as well as on the cross-roads, but have no right of entry to the parkway itself.

In closely built areas this matter has to be handled differently. In the first place, pressure of population and of riding-demand requires more frequent points of access to the parkway. They may average 600 to 800 yards apart, against 1,000 to 1,500 yards in the outer regions. This closer spacing within the city obviates a sort of Chinese Wall at the parkway.

In the second place, proper development of the city areas contiguous to the parkway includes provision for city blocks much smaller than the corresponding areas comprised within the broad country reaches. Usually these city blocks are of only 2 or 3 acres in extent, compared with 50 or 100 or 200 or even 1,000 acres within the four or more bounding roads in the more remote regions.

In the third place, the necessary provision of sewer systems, gas supply and water systems—not to mention the growing use of underground conduits for wiring leads, both telephone and lighting and power—introduces complications in the urban development scheme. Veritable grids of these service systems will exist on both sides of the parkway. Provision must be made for their interconnection, across it, at not too infrequent intervals.

This development of contiguous areas within the city limits has evolved what has come to be known as the "marginal street" or "service road." Paralleling the express road in the parkway, but separated from it by the broad, landscaped areas distinguishing the entity which we call a parkway, these service roads perform several exceedingly useful functions.

### Functions of Service Roads

They afford a ready means of providing for circulation of traffic in the residential areas adjacent to the parkway. They furnish a convenient adjunct for carrying the service systems mentioned above, and of distributing these services to best advantage. They form naturally a proper ending for the streets running down to the parkway from both sides. And those thoroughfares which cross (above or below) the parkway at appropriate intervals, by means of a bridge, tie in with these service roads so that traffic from any part of the surrounding area may make the crossing with the least possible inconvenience.

But they do much more than this. They diminish the number of bridges which would be needed across the parkway if they were not there to achieve the results outlined in the preceding paragraph. In this way they reduce the total expense of construction, and thus permit more parkway to be built for a given outlay.

Service roads also provide frontage for the adequate de-

velopment of property bordering on the parkway. At the same time, through serving as margins for the landscaped strips of the parkway, they hold building erection farther away from the express road and thus, in essence, increase the effective parkway width. A single example from the Queens Borough parkway designs will illustrate this point:

We have adopted 330 feet as a sort of standard over-all breadth of land to be acquired for constructing parkways. This includes a 44-foot, four-lane speedway in the center, two 43-foot marginal roads (28-foot roadways and 15-foot sidewalk space) and two 100-foot strips for planting shrubs and trees. Buildings are held effectively *at least* 143 feet from the nearest edge of the parkway express road. This is 43 per cent farther away than if the marginal streets were not there. And the apparent parkway width, as observed by those riding on the express road, is greater to that same extent.

## Treatment of Suburban Areas

Suburban areas, especially those somewhat removed from the city and those little subject to the inhibitions arising from a density of settlement, can best be handled in a much less elaborate manner. Access does not have to be made at such frequent intervals. Generally speaking, the municipal services previously mentioned—sewers, water, gas and the like—are missing. Individual land holdings are large, both in length and in breadth. Thus the houses and other buildings are, most of them, much farther away from the parkway. They front on existing—often distant—country roads. Hence the need for marginal roads does not exist.

Only at the necessary crossings do the problems come into a real resemblance. If grade separation must exist, a bridge is needed in both cases. And this bridge construction will be about as expensive in the one case as in the other, except as a lesser road width for the sparser traffic in the outlying district may make possible a narrower bridge structure. Access drives or ramps are needed in the country, as in the city. But the cost of acquiring the necessary width of land for effecting the separation of grades will be hugely greater in the city.

This land area should be obtained for the "country" crossings, even though exigencies of the moment preclude the possibility of making the grade separation until accumulating demand later forces it. Taking care of this feature is most important, both in city and in country, to avert the possibility of having the land otherwise occupied—even built upon—at the time the improvement comes to a head. And usually, when the project is in the development stage, the requisite acreage can be purchased at a mere fraction of what it will command later, when the new facility has started to develop the region more intensively.

## How Some Problems Are Solved Differently

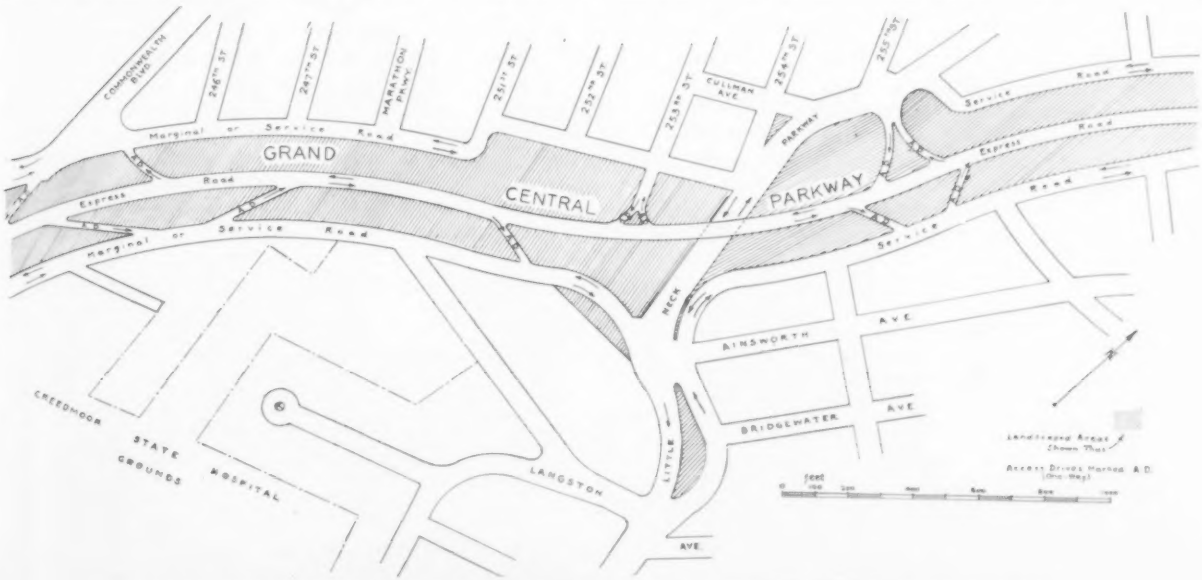
### TRAFFIC CIRCLES

Other methods of handling cross traffic have been proposed—some of them dispensing with bridges. One is the "circle" method, prevalent in the District of Columbia. Where two or three or more streets and avenues cross, a large circle is formed. This has a circular landscaped plot, frequently with a fountain in the center. All traffic entering the circle keeps to the right, turning to right into any desired outlet when that outlet is reached. There are no left turns and no transverse traffic; but the needs of motorists to accomplish those objects are duly satisfied. This method slows up traffic markedly—whereas present effort is directed toward increasing the rapidity of flow. And it requires a considerable land area.

### "STEADYFLOW"

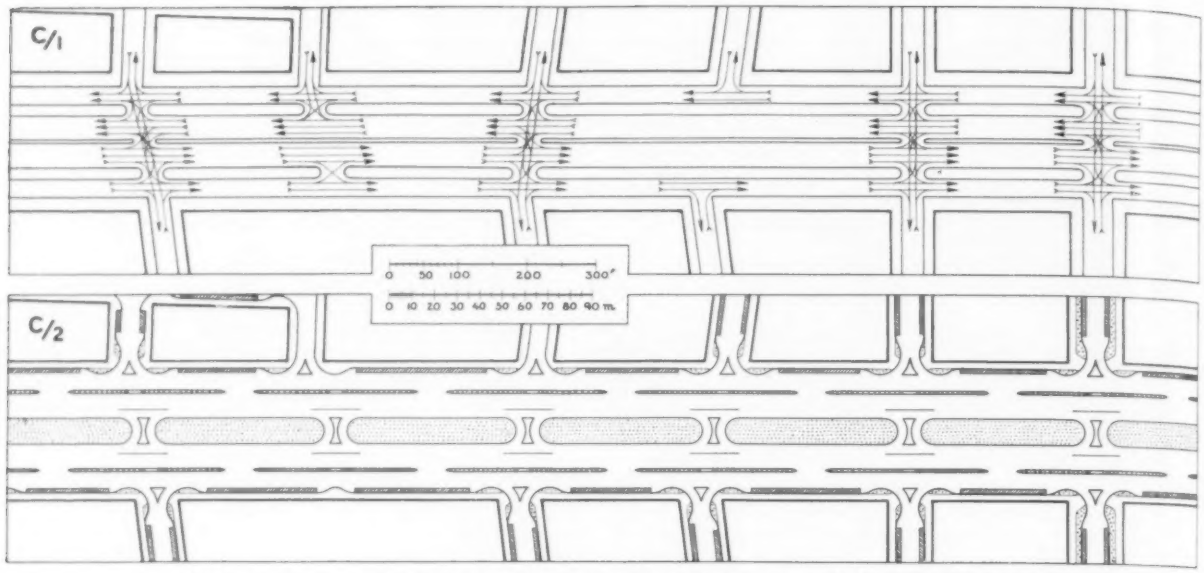
Another way of crossing without using bridges is the Steadyflow system, developed by Fritz Malcher, town and traffic planner and consultant. This method places malls lengthwise of the principal streets and plants them squarely across all intersecting streets. A car desiring to cross the main thoroughfare enters it by turning right. It gradually "weaves" across the flow of vehicles until it occupies the left-hand lane. Then, at the next gap between strips of the mall, it makes a hairpin turn to left, weaves once more across the through traffic, this time to the right side, and eventually turns to right into the desired outlet. Where cross traffic is not too heavy this method serves its purpose.

Mr. Malcher contributes to this article an illustration of how the Steadyflow system could be used practically on Queens Boulevard. The detail C/1 demonstrates the present plan of a typical section of this thoroughfare with special reference to the number of traffic crossings and therefore collision points which vehicles would have to face if this




**MAP OF SOME 3,600 FEET ALONG GRAND CENTRAL PARKWAY, SHOWING HOW THE MARGINAL OR SERVICE ROADS TIE IN WITH LOCAL STREET DEVELOPMENT AND SERVE THE NEEDS OF THE COMMUNITY**

The access drives (all one-way roads) are marked AD, arrows showing direction—"on" or "off." The shading indicates areas to be landscaped




COLLISION POINTS ON A TYPICAL SECTION OF QUEENS BOULEVARD (C/1), COMPARED WITH THE STEADYFLOW SYSTEM (C/2)

project is realized; for this part at least 128. Detail C/2 shows at the same scale the layout of the same part of Queens Boulevard according to Steadyflow principles. The number of moving lanes for through traffic and local or service traffic is kept the same. The parking places or stop lanes are shown as hatched; greenage as dotted spaces; sidewalks and pedestrian crossings as open spaces. The result of this layout is Steadyflow traffic, and vehicular intersections do not exist. Mr. Malcher believes that the traffic effectiveness will be about 100 per cent greater than under the "stop-and-go" system.

"FREEWAYS"

Edward M. Bassett, "the father of zoning," and his son, Howard M. Bassett, are sponsoring what they call "Freeways." These are, essentially, express roads permitting high-speed business traffic, and do not serve as abutting highways to those residing along them, as, indeed, a railroad right-of-way does not. In this respect they resemble our official parkway speed roads. They can provide or omit the beautiful landscaping which characterizes the state parkways now being built in Queens Borough and the marginal or service roads paralleling them. In an area already developed as urban, or to be so developed, they would have to be elevated or depressed, instead of on prevailing street grades. An example is the extension into Queens of the upper-level road of the Queensborough Bridge. The West Side Elevated Highway in Manhattan has the effect of a freeway, but is a viaduct in streets and the marginal way. The Long Island Motor Parkway would be a true example if it were publicly owned.

Through the activities of L. Deming Tilton a bill has been introduced in the California Legislature authorizing the construction of freeways. Mr. Tilton in a descriptive article brings out the point that a by-pass around a city now attracts stores that take away trade from the main business streets. If the by-pass is a freeway, stores cannot be built on it and it does not affect the business properly located on the main business streets.

### Study and Action Needed

With the great growth of automobile traffic—a growth which has been only temporarily interrupted—it behooves our cities to study seriously the question of providing adequate facilities. These must be designed so that this increasing traffic can get *into* the city, and so that it can get *through* the city—which is not the same thing, for the tendency is getting more and more to by-pass through traffic around the congested part of the city, often at a considerable distance.

Wherever arterial highway development is contemplated, the matter should be put under way at the earliest possible date. This will forestall a building growth covering the very land the routes must traverse, and thereby avoid the heavy building damage costs which would be incurred later. In any case the required land should be purchased as soon as possible, even though it may not be feasible to proceed with its physical development until later.

## American Municipal Officials and Civic Leaders to Study German City Government

THE Oberlaender Trust of the Carl Schurz Memorial Foundation, Inc., Philadelphia, announces that a group of officials from typical American cities will visit Germany and Austria this summer to make a brief study of the methods of handling municipal affairs in those countries. The trip will be made under the auspices of the Trust and in connection with the Deutscher Staedtetag, an organization representing all the German cities. The party will sail on the Deutschland, June 8. After spending four days in Berlin, it will proceed to the study of a typical German city. Each member will also study the developments in his own field in two or three other cities. The members will be:

C. E. Armstrong, City Comptroller, Department of Finance, Birmingham, Ala.; Samuel Carlson, Mayor, Jamestown, N. Y.; Dr. William Frederick Geiger, Professor of Education, Dartmouth College, Hanover, N. H.; Louis P. Head, Editor, *Dallas News*, Dallas, Texas; C. B. Hoover, Superintendent, Division of Water and Sewage Disposal, Columbus, Ohio; John Ihlder, Executive Director, Pittsburgh Housing Association, Pittsburgh, Pa.; Andrew J. Kavanaugh, Chief of Police, Rochester, N. Y.; Edward J. Meeman, Editor, *Memphis Press-Scimitar*, Memphis, Tenn.; Albert E. Neale, City Auditor, Springfield, Mass.; Clarence E. Ridley, Director, International City Managers' Association, Chicago, Ill.; Dr. George C. Ruhland, Commissioner of Health, Syracuse, N. Y.; William P. Rutledge, Chief of Police, Wyandotte, Mich.; Carl Schneider, Mechanical Engineer, Div. of Public Works, Department of Public Property, New Orleans, La.; George L. O'Reilly, City Engineer, Reading, Pa.; Lebert H. Weir, Director, Park Recreation Service, National Recreation Association, New York; O. W. Wilson, Chief of Police, Wichita, Kans.

The Oberlaender Trust was founded in 1931 by Gustav Oberlaender, of Reading, Pa. The President of the Carl Schurz Memorial Foundation, Inc., is Ferdinand Thun, of Reading. Jacob Gould Schurman, Alanson B. Houghton, Charles Nagel, James Speyer, Henry Janssen, and F. W. Lafrentz, Sr., are some of the prominent people connected with the Foundation.

# A Modern Sewage Treatment Plant in Huron, South Dakota

*By* U. F. TURPIN, M. Am. Soc. C. E.

Of Consoer, Older & Quinlan, Consulting Engineers, Chicago, Ill.

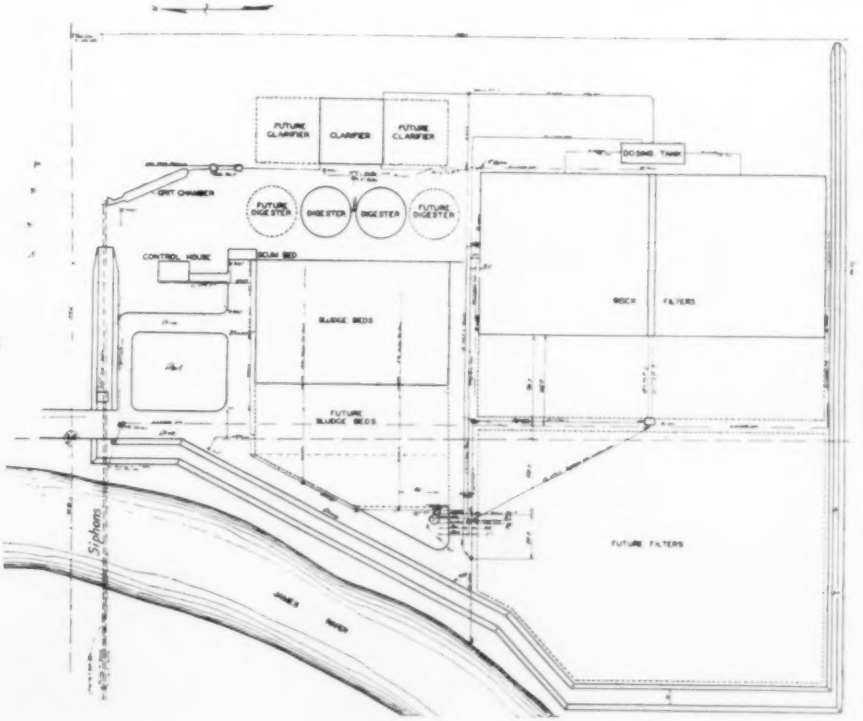
THE city of Huron has a population of approximately 10,000 persons and is situated in the east-central part of the state. It is a thriving municipality serving the farming area within a radius of 70 miles and, being a division point on the Chicago, Northwestern Railway, houses extensive repair shops and yards. Across the James River to the east, Armour & Co. operate a medium-sized packing plant. The James River is a small stream measuring approximately 120 feet in width, with a sluggish flow, the fall being approximately three inches to the mile. A low earth-fill dam east of the city impounds water for the city's supply, and the sewage from the city and from Armour & Co. enters the stream below the dam. The extremely dry seasons of 1929 and 1930, together with the heavy solids content of the sewage and the consequent forming of sludge banks in the river, produced such an odor nuisance that the City Commission thought it necessary to proceed immediately with corrective measures. Two years earlier a report on this project had been made but no action had been taken.

## Interceptors and Collection of City Sewage

The sewer system in Huron is of the combined type, having four separate outlets into the river. The elevation of the city is about 35 feet above that of the river valley, which made possible several solutions of the problem of the location and grade of the intercepting sewer. After considerable study, a high-level interceptor was determined to be the most economical, even though it required that the sewage from the north part of the city, a relatively small amount, be pumped. This layout collected all the dry-weather flow to a point near the intersection of Lawnridge and 9th Avenue on the crest of a ridge overlooking the river valley, which is approximately 2,500 feet wide at this point.

## Sites

Satisfactory sites on the west side of the river were few. Suitable bottom-lands were available only immediately south of 9th Avenue and at a point a mile and one-half south, the intervening distance being rolling hillside. The bottom-lands immediately south of 9th Avenue were thought too close to the built-up portion of the town, and the southerly site not feasible on account of the cost of extending the interceptor and the consequent pumping of the entire sewage flow. There were several suitable sites on the east side of the river opposite 9th Avenue and to the south on bottom-lands considerably higher in elevation than those on the west side of the river. The site chosen on the east side of the river was immediately south




PLAN OF THE HURON, S. D., SEWAGE TREATMENT PLANT

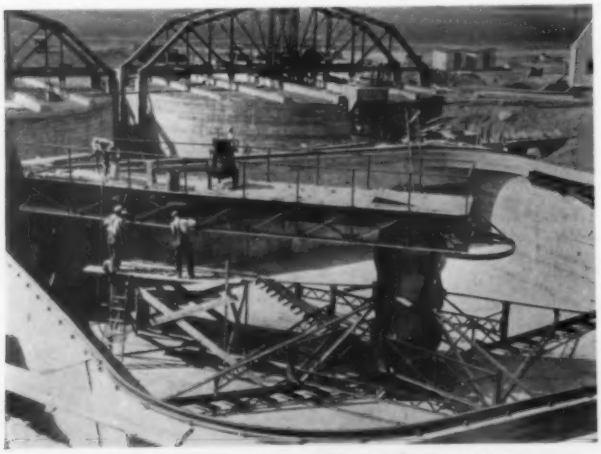
THE SCREEN HOUSE AND SIPHON ENTRANCE CHAMBER

of the extension of 9th Avenue, and sufficient fall was available to convey the sewage by gravity across the river in an inverted siphon.

### The Packing Plant

The activities at the Armour & Co. plant more nearly approach those of a slaughterhouse than of full packing-house operations. There are no wastes from the processing, cooking and canning of meats at this plant, which has a killing capacity of approximately 3,000 hogs, 150 cattle, and 250 sheep per day. For the past four or five years, the wastes from the plant have been fine-screened through 1/8-inch perforated plates before discharge into the river. The screening plant is equipped with two Dorrco revolving screens with removable plates. Considerable of the paunch wastes such as hay, grass and fibrous materials, together with large quantities of cracked corn, got through the screen, and it was thought advisable to eliminate as much of this as possible before the waste arrived at the sewage treatment plant.

One screen was equipped with plates having 1/16-inch perforations, and tests were run on its performance for a period of two months. Hot water was necessary for cleaning the screen with the finer perforations, but practically all the grass, hay and fibrous materials were removed and the only corn passing the screen was in a fine meal. Plates on both screens were changed to 1/16-inch and have been operating successfully for the past year. Screenings are removed from the screen house, dried and burned. The sewage treatment plant site is about ½-mile south of the screen house, and the screened packing-plant waste is conveyed to the site by gravity through an 18-inch sewer.



THE CLARIFIER UNDER CONSTRUCTION, SHOWING THE COMPLETED DIGESTERS IN THE BACKGROUND

### Plant Loadings

The maximum plant loadings used as a basis of design are as follows:

1. The intercepting sewer has a capacity of 4,000,000 gpd for an estimated future population of 20,000 at 65 gallons per capita per day plus double this amount for storm-water dilution during rainy periods.

2. The siphon is composed of two lines of cast iron pipe, one 10-inch with a maximum capacity of 970,000 gpd and one 16-inch with a maximum capacity of 3,250,000 gallons per day. The total capacity of both lines under maximum head is 4,220,000 gallons per day. Sufficient capacity has been provided in the siphon to accommodate a small area south of 9th Avenue not now sewered.

3. The present treatment plant provides primary treatment for the total maximum discharge of the siphon, and in addition an estimated 1,000,000 gpd of packing-plant waste. Secondary treatment is provided for a maximum of 2,500,000 gallons per day.

The present flows are considerably below the foregoing design assumptions, as will be shown later.

### Treatment Plant

For convenience, the units of the plant will be discussed in order of flow through the plant.

*Screen and Siphon Entrance Chamber.*—The sewage enters this structure and passes through a 1-inch bar screen, mechanically cleaned by a moving rake made by the Dorr Co., and thence to the siphons. The elevation of the invert of the 16-inch siphon is above the top of the 10-inch siphon, so that the smaller siphon is flowing full before any sewage enters the larger one. The siphon entrances are equipped with sluice-gates, so that the flow may be controlled if desired, and a by-pass is provided to take flows in excess of the siphon capacity or to protect the structure in case of the clogging of a siphon.

*Siphon.*—As stated before, this unit is composed of 10-inch and 16-inch cast iron pipe. It is 2,032 feet in length, and the difference in elevation between the entrance and the lowest part of the siphon under the river is approximately 34 feet.

*Grit Chamber.*—The siphons deliver the sewage into any one or a combination of three flowing-through channels. Each channel is 2 feet wide by 60 feet long. The settled grit is removed by flushing through a short pipe to a sand bed adjacent to the driveway, where it can be hauled away.

*Meter Chamber.*—This is a small underground pit at the end of two 24-inch flumes, 30 feet long, one flume carrying the city sewage, the other the packing-house waste. Diaphragms indicate the height of the liquid flow in each flume, and it is transmitted to the flow recorders in the control house.

*Mixing Chamber.*—At this point, the packing-house waste is intimately mixed with the city sewage and is conveyed through one conduit to the clarifier.

*Primary Settling Tank.*—There is one primary settling tank in the present layout, equipped with a Dorr traction-type mechanism and skimmer. The tank is 65 feet square with 10-foot sidewater depth. The skimmings are conveyed to a sand bed, where after draining they are removed for burning or burial.

*Dosing Chamber and Filter.*—The filter is 1.3 acres in area, divided into two beds with a central inspection gallery. The rock is native quartzite ranging in depth from 7 to 8 feet. The sewage is dosed from twin dosing chambers on separate fields through fixed sprays. The dosing chamber and distribution piping are designed for a filter area of 1.9 acres, or an extension of 85 feet onto the present filter. Thus the filter area may be increased almost one-third without additional dosing facilities and without hampering the operation of the existing filter. An orifice plate and a by-pass weir are installed between the clarifier and the dosing chamber, regulating the flow to the dosing chamber. All flow in excess of the capacity of the filter is by-passed automatically at this point.

*Digesters.*—Two heated sludge digestion tanks, each 50 feet in diameter and 21 feet deep, provide 82,500 cubic feet of sludge-digestion capacity. Each tank is equipped with Dorr sludge-removal mechanism, gas dome, heating coils, etc. As much as 70,000 cubic feet of gas per day has been produced in these tanks, owing to the large amount of organic solids in the packing-house waste.

*Sludge Beds.*—Ten open sludge drying beds, each 25 feet by 100 feet, provide ample area for the drying of digested sludge. Each bed is provided with a concrete runway with curb, for the removal of sludge by wagon or truck.

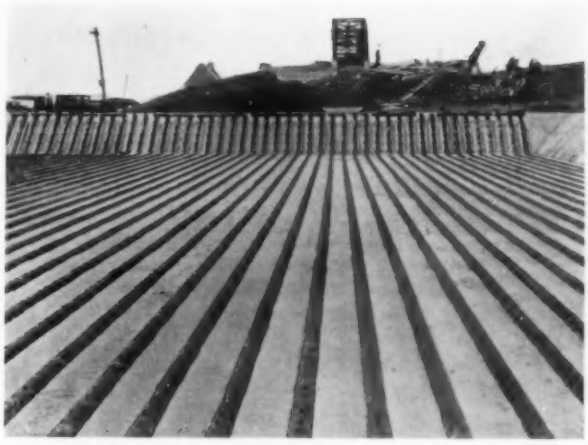
*Control House.*—The basement of this building houses duplicate plunger sludge pumps, a siphon clean-out centrifugal pump, two gas-fired boilers (one to heat the building, the other to heat the digesters), gas meters, etc. The basement also serves for a one-car garage for the operator's car during winter months. The upper floor contains a laboratory, an operator's office in which are mounted the meters and various alarm systems for machinery throughout the plant. A washroom, toilet and shower-bath complete the facilities on this floor.

*Drainage Lift Station.*—The elevation of the plant site is approximately 2 feet below extreme high-water level. The entire site of 13 acres was diked with excavation from the filter, and a small circular pit with vertical drainage pump was installed to keep the site dry at all times. The piping to the pit is so arranged that the filter effluent can be pumped during high water or the effluent from one-half the filter can be returned to the dosing chamber to be dosed on the other half of the filter. It is thought that this arrangement permitting a plant-size experiment on double-filtration will afford useful data for enlarging the plant at some future date.

## Cost

| | |
|---|---|
| Intercepting sewers including siphon across river to plant site.. | $44,769 |
| Treatment plant | 185,077 |
| Site | 2,600 |
| Total | $232,446 |

Unit costs on a plant of this nature are hardly comparable, on account of the necessary enlargement of the digesters and sludge beds to provide capacity for the packing-house wastes, but a cost of $74,000 per million gallons of capacity is low for a plant of this size.



THE COMPLETED UNDERDRAINAGE SYSTEM OF THE ROCK FILTER DURING CONSTRUCTION

## Operation

The units providing primary treatment were put in service in October, 1931. The filters were completed in December and were operated throughout the winter. The entire construction contract was not completed until May, 1932. Records on the operation of the plant are available for the months of May, June, July and August. The average flow for these months is as follows:

| | Sewage Received Gal. Per Day | | | Filter Dosage Gal. Per Acre |
|---|---|---|---|---|
| Month | City | Armour | Total | Per Day |
| May | 576,000 | 316,000 | 892,000 | 665,000 |
| June | 558,000 | 415,000 | 973,000 | 710,000 |
| July | 498,000 | 348,000 | 846,000 | 622,000 |
| August | 474,000 | 353,000 | 827,000 | 546,000 |

There are insufficient chemical data at hand at the present time to comment at length on operation, for lack of funds has prevented the city from keeping a chemist at the plant. A few biochemical-oxygen-demand determinations have been made over this period by W. C. Moor, sewage chemist, of Armour & Co. A typical oxygen-demand value as determined from a composite of mixed city and packing-house waste over the killing period is as given on the following page.

THE ROCK FILTER UNDER CONSTRUCTION, SHOWING THE METHOD OF PLACING THE ROCK

| | B.O.D. in p.p.m. |
|---|---|
| Raw sewage (mixed.) | 900 |
| Settled (mixed) | 505 |
| Final effluent | 64 |
| Reduction | 92.7% |

Stabilities vary from 5 to 18 days.

During the first six months of operating the digesters considerable trouble was experienced with foaming. Heat was supplied to them from a coal-fired boiler until sufficient gas was produced to maintain a temperature of 85 to 90 degrees at all times. Approximately 8 tons of lime was used during this period, with little success. Alkaline digestion was established in the sixth month of operation, and no trouble of this nature has been experienced since that time.

While a lack of chemical information may make impossible conclusive technical discussion of the successful operation of this plant, it is obvious to the layman that a miraculous change has taken place in the outlet stream. The spring floods of 1932 washed out the 3 to 4 feet of digesting sludge in the stream bed and left a clear, odorless stream. The treatment plant has furnished an effluent of sufficient quality to maintain this condition, and it is reported that fish are now caught below the dam.

The Huron sewage treatment plant, including intercepting sewers and all appurtenances, was designed by Consoer, Older & Quinlan, consulting engineers, Chicago, who also supervised its construction. Harold W. Groth was resident engineer during construction. The contractor on the intercepting sewers was Carl Savonell, Sioux City, Iowa. The plant was constructed by the Huron Construction Co., general contractors, of Huron.

## Social Workers Discuss Public Works and Rational Taxation for Economic Recovery

"SOME way must be found to increase the expenditure of somebody on something. How else can the progressive decline in employment and business be arrested? But workers cannot increase their expenditures unless more of them are employed. More workers cannot be employed until there is a demand for more products. Until there is a larger market, private employers cannot increase their output."

The most practical answer to this problem, in the opinion of Otto T. Mallery, of Philadelphia, who propounded it at the Conference on National Economic Objectives for Social Work, held in New York on April 22 by the American Association of Social Workers, is a program of public works of sufficient volume to prime the pump of private industry.

"The Federal Government alone," said Mr. Mallery's statement, "has the credit and the courage. Federal credit boldly used for public works would increase the volume of employment and the demand for products, at least for a short period. During that period private employers would have an incentive and an opportunity to resume their usual functions."

Mr. Mallery pointed out that if local governments, through careful planning and budgeting in good times, were able to borrow now to increase their public works to the same relative extent as the Federal Government can, the impact of new employment and new credit thus created would be irresistible. To attain such a combined result and to prevent and counteract future periods of unemployment, Mr. Mallery recommended the long-term budgeting of capital expenditures by cities and states. He called attention to the Federal Employment Stabilization Board, recently created for that purpose, and also to public works planning legislation now before the Legislatures of Massachusetts, Pennsylvania, California and Connecticut.

### A Wise Tax Policy

That taxation is one instrument of social policy which can be used to accomplish a high degree of social control with a minimum of bureaucracy, was emphasized at the Conference by Professor Joseph McGoldrick, of the Department of Law of Columbia University:

"A large part of our present economic difficulties is traceable to over-investment in capital equipment. In some instances there may be an absolute over-capacity; in most, however, over-capacity is such only in relation to consumer purchasing power. Such over-investment is a symptom of maldistribution of national income. The values of steel mills, automobile factories, office buildings, hotels and theaters, and the stocks and bonds which represent their ownership, are dependent upon national purchasing power. Our need, therefore, is more income available for expenditure, and, for the time being at least, less put into investments which tend to expand production. A wise tax policy would, on the one hand, avoid consumption taxes which lessen the spending power upon which the values of our system rest and, on the other hand, would reach out and tax that surplus income which if untaxed is likely to contribute to unsound expansion."

## "THE FUTURE IS TO THE PLANNERS"

THAT the future is to the planners and that the field of public works offers a great opportunity right now for the beginning of a nation-wide experiment in controlled economic planning, is the conclusion of Robert D. Kohn in a stimulating article in the March number of *The Octagon*, the magazine of the American Institute of Architects.

"By public works," explains Mr. Kohn, "I mean that large and comprehensive service which is intended to provide to the greatest extent the amenities of living to the people. It is to that end that we must apply ourselves to use the thought and the labor of men. The process of development can only be gradual. There is no approach to it which, in my opinion, offers so excellent a microcosm of the larger problem as does the study of the shelter of the individual family so related to the community with its concomitant opportunities for work, for education, and for recreation, and such a relation of that community to the city or state as will make possible not alone a greater measure of material well-being, but give opportunity for the development of the high capacities of men, as men.

Mr. Kohn continues:

"'Visionary and impractical' somebody called me. Well, many of the hard-boiled 'practical' men are now as poor in dollars. Ideals and ideas are the only assets left any of us. I venture, then, this prophecy. We shall have, of necessity, a decade of public works construction and rebuilding of our cities and the building-up of new and smaller industrial centers, all on a scale never before realized. I hope it will be organized on the basis of long-term nation-wide planning, so that it may give self-respecting work to the unemployed and use that work for the good of all in those places which offer the greatest promise of a decent working life for the maximum number of people. I hope it will be developed so as to teach us how to attack the other economic problems of production and distribution with which we are faced."

# Treatment of the Water Supply of Wellsburg, W. Va.

## *Well Water Is Aerated, Filtered and Softened*

*By* **M. J. DAVIS**
**and**
**W. J. HERVEY**
**Members, City Water Board**

THERE is always some difference of opinion in communities lying along such a stream as the Ohio River as to whether the water supply should be taken from the stream or from wells. It is recognized that the raw water in either case is seldom, if ever, perfectly satisfactory for all uses and that some kind of treatment is necessary. Wellsburg, W. Va., chose a well system in 1928 after the City Council and the Water Board had fully considered the respective advantages and disadvantages of well-water and river-water systems. The choice was partially influenced by the relative cost of the two systems, the well plan being only about one-half as expensive as a filtration plant to purify the river water. Water for the Wellsburg supply is derived from two Layne wells 24 inches in diameter by about 70 feet deep. The water is raised from the wells by vertical centrifugal pumps operated by electric motors controlled from the pumping station.

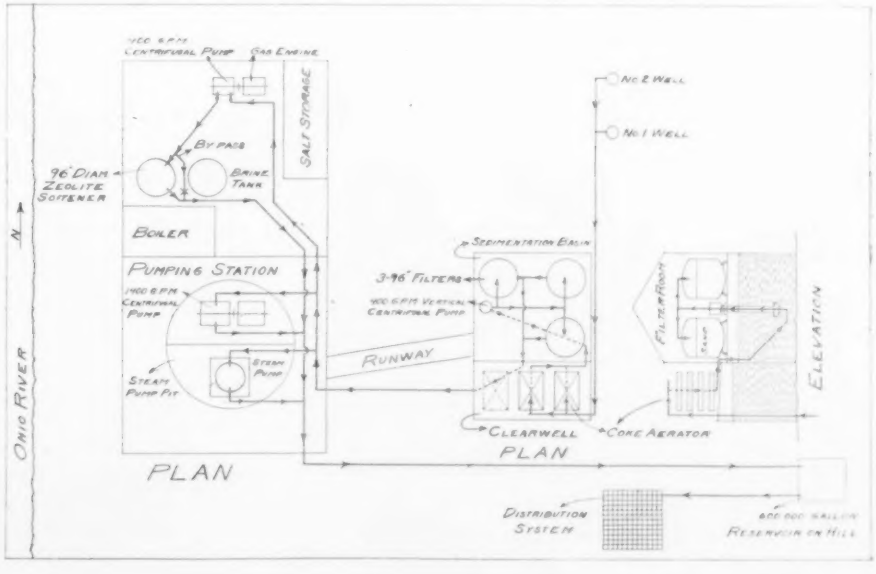
### Aeration

As the water issues from the wells, it is clear, sparking and cold. In common with most well waters, however, it contains iron, hardness and some dissolved gases. Aeration is a good treatment for any water supply and is particularly beneficial for ground water containing iron in solution and dissolved gases. The aerator at Wellsburg consists of large boxes or trays supported one above the other and filled with lumps of coke. Water direct from the wells is sprayed over the coke in the upper trays. It spreads out in a thin film over the irregular surfaces of the coke, and drops through the wire screen bottom of a tray into the next lower tray. By flowing as a film over the coke and dropping in small streams from tray to tray, the water loses the dissolved sulphur gases, carbon dioxide and others, which up to this point have held the iron in solution. Atmospheric oxygen is also absorbed to further promote coagulation of the iron, which can then be filtered out.

From the bottom of the aerator the water flows by gravity into a concrete sedimentation basin, which is large enough to afford a retention period of about 1½ hours. Although the iron is present as only one part per million of water, it nevertheless becomes visible in the aerated water after it has passed through the sedimentation basin. The water appears cloudy owing to the suspended solid particles of hydroxide of iron. The next step, therefore, is the straining or filtering of this material by passing the aerated and settled water through a layer of sand.

### Filtration

Iron removal is accomplished in three Permutit steel pressure filters installed on the floor above the settling basin. They consist of closed steel tanks fitted with a gridwork of piping in the bottom, equipped with nozzles. This underdrain system serves the double purpose of collecting the filtered water which flows down through the sand, and of admitting backwash water up through the sand during periods of cleaning or backwashing the filter. The upper layer of fine silica sand which is the filtering medium is supported by successive layers of coarse sand and gravel




A FLOW DIAGRAM OF THE WATER WORKS AT WELLSBURG

and is thus prevented from passing through the filter.

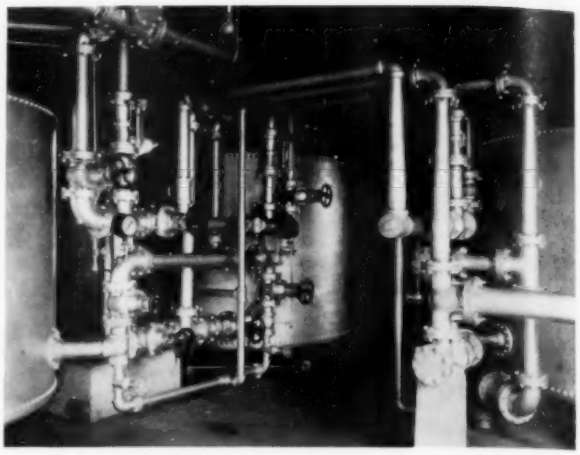
The water is pumped from one corner of the settling basin to the chamber in the top of the filters, above the sand. It is forced under light pressure down through the sand and gravel at a rate of 2½ gallons per square foot per minute. Clear, iron-free filtered water passes out of the filter through the piping in the bottom. The iron, in the form of a brownish deposit, is caught on the surface of the sand, and the run is continued for several hours until a sufficient quantity of iron has accumulated to slow up the flow of water through the filter. The water is then shut off from the top, and clear filtered wash water is pumped into the bottom of the bed and forced up through the sand. The iron deposit is thus dislodged from the surface of the sand and washed to the sewer. This operation is continued until the sand bed has been washed clean. When the wash water clears up, it is shut off, and the unit is ready for another filtering run with the flow of water downward. The filtered water flows by gravity from the bottom of the filters into a concrete clear well.

### Pumping Equipment

As the water in the clear well is free from iron, the next step is to soften it and elevate it to the reservoir by the high-pressure pump. The equipment originally installed in the water works consisted of one large steam pump. This unit is still in service and is occasionally used as a standby installation supplementing the more modern and economical electrically driven centrifugal pump which was installed in 1923. It was necessary, however, to provide auxiliary standby pumping equipment to insure uninterrupted service. To this end, a small centrifugal pump has been provided. This pump would normally be driven by an electric motor, but in view of an old contract between the city and the gas company, it was decided to drive the pump with a gas engine, thus saving a substantial portion of the monthly electric power bill.

The piping from the clear well has been so arranged that the filtered water may be pumped to the reservoir by either the gas engine-driven unit or the electrically driven unit. It may also be handled by the old steam pump.

THE AERATOR, SHOWING THE FINE STREAMS BETWEEN TRAYS, PERMITTING A THOROUGH MIXTURE OF AIR AND WATER



THE FILTERS AND INTERCONNECTING PIPING

### Softening

The filtered water is softened by Scaife zeolite treatment, since the raw water contains 13 grains of hardness per gallon, which is too great for average drinking, domestic and industrial purposes. This is reduced to about 6 grains per gallon by the softener. Zeolite or greensand is derived from a mineral deposit in New Jersey which has the peculiar and valuable property of absorbing lime and magnesia from hard waters passing over it. The zeolite is placed in a steel tank, just as silica sand is placed in a filter, and the water is pumped through this tank on its way to the reservoir. In order to secure the proper degree of hardness or softness for general use, a measured quantity of the filtered hard water is by-passed around the softener and mixed with the soft water which has passed through the zeolite.

A given quantity of zeolite can soften only a given quantity of water before it loses its capacity to absorb lime and magnesia. When this point is reached, the water is shut off and the zeolite is regenerated with a strong solution of common salt or brine. Salt is therefore the only raw material used to soften water by the zeolite process, and its use is indirect, since none of the salt ever gets into the system. Following regeneration, the zeolite is backwashed to the sewers in the same manner as a filter is backwashed to remove iron. This process can then be repeated practically indefinitely.

### Storage Reservoir

After the water has been softened, it is pumped into an open concrete reservoir on a hill above the city. From there it flows by gravity into the distribution system. The reservoir has a capacity of 1,600,000 gallons, or sufficient to supply the city for nearly a week. This unusually large reserve might be of great value in case of a serious fire or a breakdown of the pumping equipment. The fact that the reservoir can be seen from the pumping station nearly a mile distant makes possible the use of a novel method of checking the depth of water in the reservoir. A scale on a float gage indicating the depth of stored water is read through a telescope from the pumping station.

An open reservoir exposed to direct sunlight is not an ideal water storage. Sunlight and warmth promote the growth of minute vegetable organisms known as "algae." These growths give off oils which produce tastes and odors

when present in sufficient quantities. Few if any water supplies are entirely free from one or more of the many species of these otherwise harmless organisms. It may be desirable sometime in the future to construct a roof over the Wellsburg reservoir to exclude sunlight and such foreign substances as leaves and dust.

It has been necessary in the past, especially in warm weather, to wash out the reservoir at frequent intervals, to remove the accumulation of iron and algae. To facilitate this operation, a hose connection has been made in the supply line, and the time required for cleaning has been substantially reduced. Inasmuch, however, as the iron is now being removed by the filters, and this iron is an essential food for some of the algae, it is not necessary to flush the reservoir as often. In connection with cleaning the reservoir, it is customary to flush out the mains through the fire hydrants, using fresh water after the reservoir is refilled. This work is done, so far as possible, when the demand for water is reduced to a minimum.

### The Distribution System

The main distribution feeders and connected piping of the Wellsburg water system comprise a total length of about 12 miles. Heavy cast iron pipe with leaded joints is used throughout and the lines are laid about 4 feet deep, in accordance with standard practice. In laying new mains in recent years, special attention has been given to the elimination of dead ends, and only a few such conditions remain to be corrected.

### Chlorination

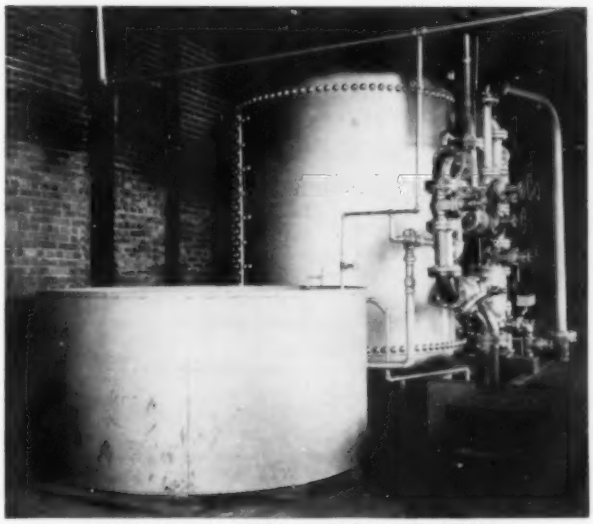
The use of chlorine as a precaution to insure complete sterilization has been practiced for many years. Samples of water are sent each month to the Division of Sanitary Engineering, West Virginia State Department of Health and tested for B. coli. Negative results indicating a safe water have been the rule.

### Removal of Deposits in Mains

As the use of softer water continues and it flows through the distribution mains and connected piping, it is expected that some of the scale and corrosion which have been occurring in the lines will slowly be absorbed. In spite of the fact that only clear iron-free filtered water is now pumped to the reservoir, it is more than likely that surges of discolored water will be encountered from time to time as this old deposit is acted upon and broken loose. The underlying scale began with silt and mud from the river water, and this layer has been covered with an accumulation of iron, and manganese. Considerable time may elapse before these spells of dirty water cease altogether.

### Conclusions

The results obtained with the new Wellsburg water system have been very gratifying. Although we were reasonably confident of success, it was scarcely expected that the average consumer would be observing enough to note the improvement in the water supply. This was not the case, however. The improvements were so marked and so definite that favorable comments were freely expressed on all sides. The familiar "ring around the bathtub," due to soap curd, has entirely vanished. The consumption of soap and water-softening powders has been diminished by more than half. When soft water was first turned into the mains, a number of people added the amounts of soap and washing powders they had always used, with the result that suds ran over the top of their tubs and washing machines.



THE WATER SOFTENER, WITH THE BRINE TANK IN THE FOREGROUND

It is unanimously agreed that laundry work now requires less time than formerly and that even badly soiled clothes are much more easily washed. The direct economies effected indicate the truth of the statement that "it costs more to use hard water than it does to soften it."

The reduction of the hardness from 13 grains to 5 or 6 grains has been reflected in reduced deposits in the coils of hot-water heaters and a saving in fuel. The removal of the iron has completely eliminated stains on plumbing and clothing being laundered. Tastes and odors also have been practically eliminated, although the flushing of dead ends will probably be necessary from time to time.

## *National Health Conservation Contest*

WINNING cities in the National Health Conservation Contest, conducted annually by the Chamber of Commerce of the United States and the American Public Health Association, were announced on April 23:

Group I (500,000 population and over), Detroit, Mich.
Group II (250,000 to 500,000 population), Cincinnati, Ohio
Group III (100,000 to 200,000), Syracuse and New Haven, Conn. (tied)
Group IV (50,000 to 100,000), East Orange, N. J.
Group V (20,000 to 50,000), Brookline, Mass.
Group VI (Under 20,000 population), Lodi, Calif.

The annual Health Conservation Contest is intended to determine which of the competing cities in the six groups have the best-balanced community health programs and which have been most successful in maintaining or attaining favorable health conditions. In the contest now closed 140 cities participated.

Following the winning cities, five cities in each of the population groups have been awarded honorable mention as follows:

| Group I | Group II | Group III |
|---|---|---|
| Milwaukee | Rochester, N. Y. | Peoria, Ill. |
| Chicago | Newark | Hartford |
| Baltimore | Toledo | Grand Rapids |
| Pittsburgh | Minneapolis | Reading, Pa. |
| Buffalo | Dallas | Yonkers, N. Y. |

| Group IV | Group V | Group VI |
|---|---|---|
| Evanston, Ill. | Santa Barbara | Chestertown, Md. |
| Pasadena | West Hartford, Conn. | Shorewood, Wis. |
| Schenectady | Newburgh, N. Y. | Palo Alto, Calif. |
| Pittsfield, Mass. | Watertown, N. Y. | La Salle, Ill. |
| Charleston, S. C. (tied) | Santa Ana, Calif. | Peru, Ill. |
| Lincoln, Nebr. (tied) | | |

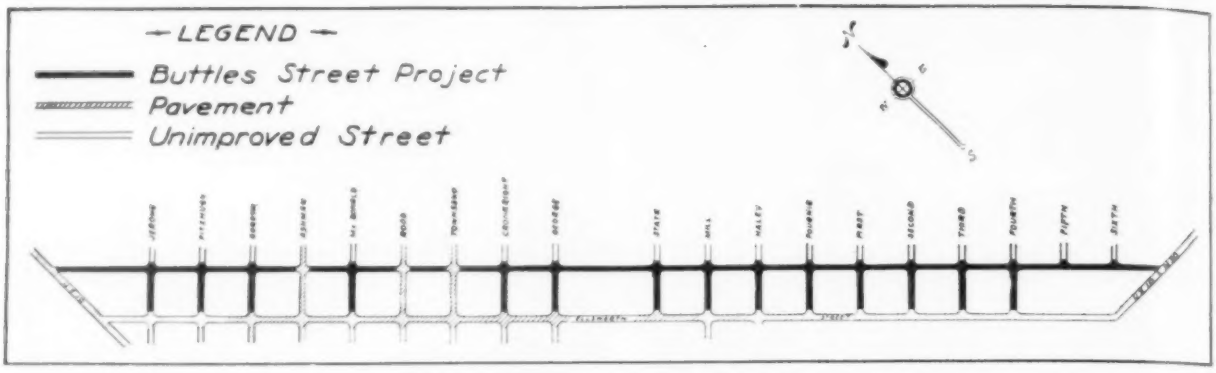



FIG. 1.—PLAN OF THE STREET CONSTRUCTION PROJECT, MIDLAND, MICH.

# A Stabilized Gravel Street

## *A Low-Cost Project and Its Relation to Unemployment Relief*

*By* **KARL B. ROBERTSON and D. N. SMITH**
**City Engineer and Construction Engineer, respectively, Midland, Mich.**

ATTEMPTING to make worn-out streets stand up under modern conditions has long been a problem in Midland, Mich. This is true especially because the streets under maintenance were not built to a preconceived grade and lacked a type of surface that would withstand the ravages of traffic. Cinders, which could be easily obtained, had been used to a great extent for surfacing, and they had at last pulverized to the point where maintenance was almost impossible.

The following factors were considered in selecting the type of construction to be used:

1. The cost had to be low enough so that the improvement would be applicable to universal use throughout the residential section of the city.
2. Continuously smooth, dustless streets were required during the spring, summer and fall at a reasonably low maintenance expense.
3. As large a proportion of the cost as possible had to furnish employment for local labor.

It was believed that all these conditions could be met by the construction of a street consisting of a sand-clay base with a stabilized gravel wearing surface about two inches thick, the sand in the existing grade providing the major part of the material for the base.

A cooperative plan was followed, under which the street could be constructed with no outlay for new equipment. The city of Midland provided all labor and materials for the project, together with the necessary surveys and plans. The County Road Commission furnished the motorized grading machinery and some trucks. The Dow Chemical Co. gave the services of its Road Research and Soil Analysis laboratory, together with the results of studies it had made of proper combinations of sand and clay for road construction. A plan of the entire project is shown in Fig. 1.

### Curb and Catch-Basin Design and Construction

A curb design was selected that was low in cost and could be constructed using unskilled labor and that would not interfere with grader operation on the finished job. The intersections were built using as large a radius as convenient. Fig. 2 shows curb and driveways, and Fig. 3 is a sketch of one complete block, including curb returns and catch-basin locations.

To eliminate any possibility of the catch-basin's interfering with the grader operation, a special type was designed. (See Fig. 4.) It will be noted that the entire structure was placed in the out-lawn back of the curb. As no traffic would pass over the basin, the use of a light casting and a low-cost type of sump construction was possible.

Part of the project was in an area of the city unserviced by sewers. A cross-section of the street used in such locations is shown in Fig. 5.

In order to simplify the work of obtaining the correct levels during excavation, the curbs were installed first. The steel forms used for the straight sections were rented. It was found that a crew of ten or eleven men selected from among the unemployed, supervised by a good foreman, could be used to do all the work in connection with the straight curb construction, including setting the steel forms. To spread the work, two five-hour crews were used each day. Generally, forms were stripped and set in the morning and filled in the afternoon. By using about two pounds of calcium chloride per sack of cement in the mix, the concrete was hard enough by the following morning to permit the removal of the forms without damage to the curbing. Wood forms were built for all curved sections of curb. For this work, men who had some mechanical skill were selected.

### Preparing the Grade

The excavation was handled with the same set-up of two crews of men using local trucks supplemented with county trucks when necessary. The ground was plowed, and the men loaded the dirt entirely by hand. This method was not as economical as the use of power equipment, but provided work for many more men. A screed which rested on the curbs was dragged along to level up

the subgrade as the work progressed. The grades were easily obtained in the curbed section of the road, and dirt was removed to a flat subgrade five inches below the top of the curb. In the unsewered portions of the project, a shallow ditch section was used and the grades were set by the slope-stake method, which also controlled the ditches.

### Studies of Soil Properties

In adjusting the properties of the resulting sand grades to render them stable, the soil theories and tests were used which had been developed by the U. S. Bureau of Public Roads in connection with their subgrade soil studies. A brief explanation of some of the principles underlying sand-clay combinations will precede discussion of the actual work of base construction.

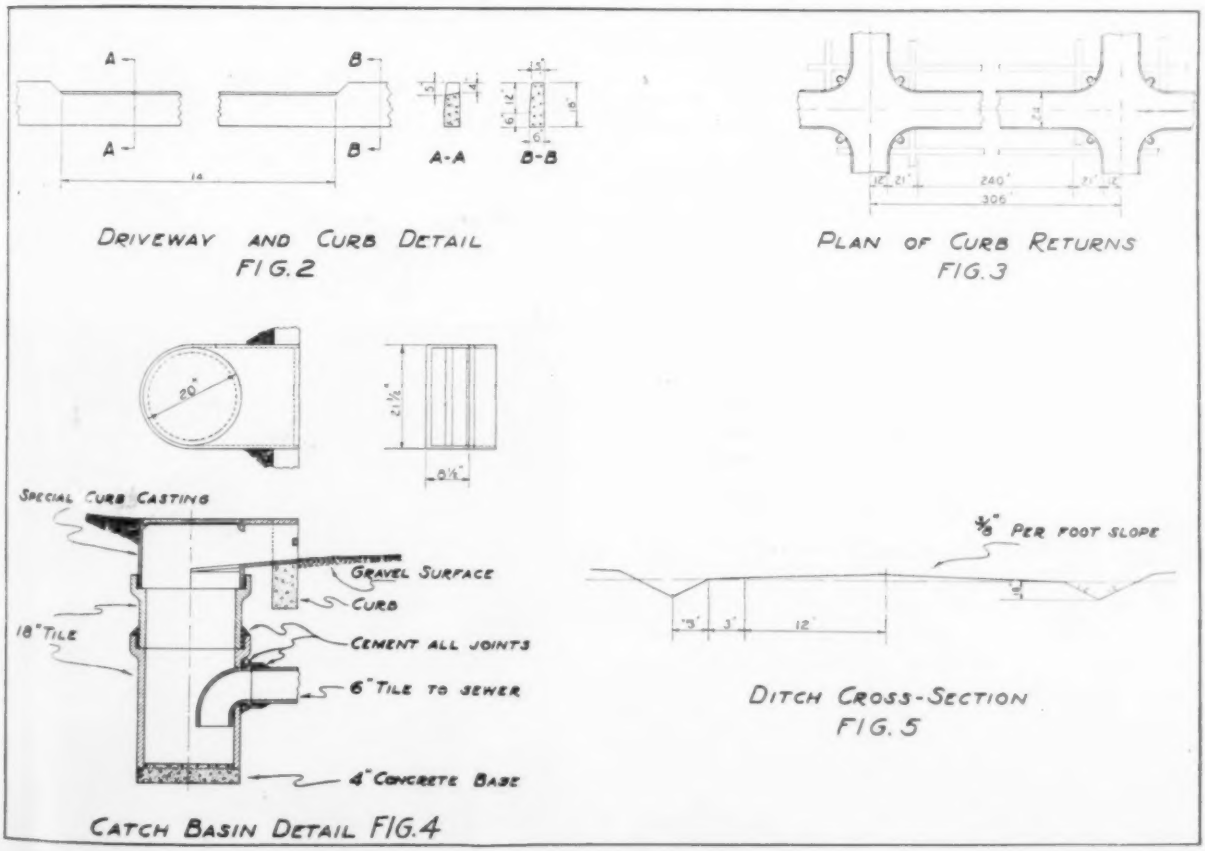
Stability is defined as resistance to lateral flow under load. Loose sand, such as that under consideration, is particularly unstable when dry. Clay is firm when dry, but is apt to become very unstable when wet, especially under the action of traffic. By properly combining these materials it is possible to produce a mixture which retains the resistance that is offered by sand to displacement under wet conditions, and to secure the cementing and hardening action that is supplied by clay in dry weather.

The way in which these constituents function is described in Fig. 6. The upper part of the illustration shows the relative sizes of sand, silt and clay particles. The lower cuts show how the finely divided clay particles serve as a paste for sticking the sand and silt grains together. In many localities, mixtures of this nature, which contain a considerable percentage of coarse sand and fine gravel ranging up to ¼-inch in size, are used as wearing surfaces. However, the sand in the subgrades on this job all passed a 40-mesh sieve; consequently, it was suitable for base construction only.

The results that are obtained depend to a large degree on the thoroughness with which the clay and sand are mixed. Obviously, the clay must be very finely divided to be fully effective as a binder. While a number of mixing schemes were tried, only the one which was found to be most satisfactory will be described here. It utilized the fact that thoroughly dry clay lumps will be entirely disintegrated and slaked to a thin paste if immersed in water. Damp lumps will not break up in this way.

### Mixing the Sand and Clay

Laboratory tests showed that the quantity of clay required would be 24 cubic yards per block, and 12 cubic yards per intersection. This material was delivered along the center of the streets, where it lost some of its water by evaporation. It was then spread over the entire area with a motor grader, and left there until thoroughly dry. Using fire hoses, water was evenly distributed over the street surface, and the slaked clay and wet sand from the subgrade were mixed to a depth of 6 inches with a spring-tooth harrow drawn by a 30-horse-power caterpillar tractor. About three hours of wet mixing were required per block. Water was added from time to time as required, to keep the material sufficiently fluid so that it would flow through the harrow teeth. The mixing operation is shown in Fig. 7.




FIGS. 2-5.—ENGINEERING DETAILS

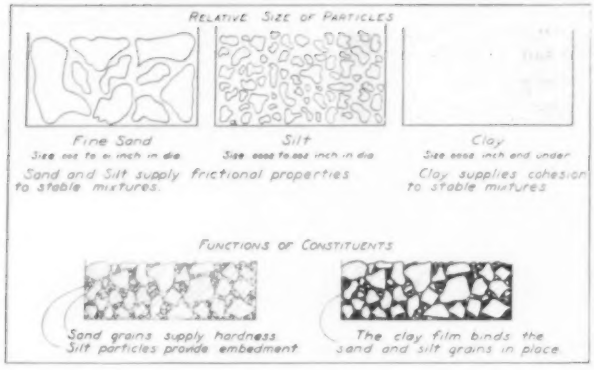

RELATIVE SIZE OF PARTICLES
Fine Sand
Size one to o inch in dia
Silt
Size one to one inch in dia
Clay
Size one inch and under
Sand and Silt supply frictional properties to stable mixtures.
Clay supplies cohesion to stable mixtures
FUNCTIONS OF CONSTITUENTS
Sand grains supply hardness
Silt particles provide embedment
The clay film binds the sand and silt grains in place

FIG. 6.—SAND-CLAY CONSTITUENTS AND THEIR FUNCTIONS

At intervals of one hour it was necessary to blade the mud toward the center of the street, using a small grader. When this was not done, the soft sand-clay overflowed the curb ahead of the harrow or tractor. After the mixing was completed, the material was floated to the center and smoothly crowned as high as possible. This prevented any possibility of rain forming pools of water and slowing-up the drying process.

As soon as the mixture had dried out enough to carry the tractor, final shaping was started. The sand-clay base was thoroughly dried, smoothed and compacted by traffic before the top course was applied. Usually two or three weeks of warm, dry weather were required to complete the necessary hardening of the sand-clay.

The principles that were described in connection with sand-clay mixtures are also of value in preparing highly stable gravel wearing surfaces. The best quality gravel is a mixture of stones with a high-grade sand-clay. The latter is sometimes referred to as the soil mortar. It must be present in sufficient quantity to entirely fill the voids between the stones.

When the properties of the combined fine binding constituents are so adjusted that the mixture has maximum stability, the resulting gravel surface responds especially well to treatment with calcium chloride. The gravel particles are firmly embedded by traffic in the so-called soil mortar. They are held in place by the cohesive material which it contains. Moisture, which is secured from the air by the calcium chloride treatment and is held in the surface by it, supplies additional cohesion to the mass. The binding action of the moisture prevents the loss of the valuable fine binder particles from the surface.

### Three Combinations of Materials

Three different combinations of materials were used on the city street project, but the sand-clay gravel principle was used in all of them:

(a) *Pebbles, sand and clay.*—A low-cost, waste pea gravel was available which made an excellent surface when properly combined with local sand and clay. The pebble contained practically no sand and was all under ⅝-inch in size. The clean sand used was rather fine, since 95 per cent of it passed a 40-mesh sieve. A suitable binder, containing 70 per cent clay and 30 per cent silt, was obtained. The method of delivering and mixing these materials, as well as the steps in preparing the sand-clay base, are illustrated and described in Fig. 8.

(b) *Sandy gravel to which clay was added.*—Several hundred yards of gravel were obtained from a Midland County gravel-pit. It contained 40 to 50 per cent of coarse material retained on a 10-mesh sieve, and the remainder was largely sand with very little binder. This was improved by the addition of enough clay to adjust the properties of the fine constituents. The clay was dried, slaked with water and mixed with the gravel in place, using a motor grader.

(c) *Limestone screenings and clay.*—In many localities, sand and gravel are not available. Sometimes stone screenings can be obtained in these places at a moderate cost. Such material can be bound with clay in the same way as sandy gravels are handled, the finer particles of crushed stone serving as sand and the coarser pieces acting as wearing material.

One block of the project was covered with a limestone waste of this nature which contained about 50 per cent of particles retained on a 10-mesh sieve. Clay was added to convert the fines to a sand-clay, the quantity used in this case being about 10 per cent of the total volume of the stone waste. The mixing of the materials was done in the usual way.

The entire project was treated with calcium chloride at the rate of ½-pound per square yard after drying and shaping. All the stable, wearing surface mixtures that have been described appear to be equally satisfactory. While they have been in service for only a short time, they are entirely dustless, easy to maintain, quick to shed and transfer water to the catch-basins, and economical to build.

Photographs of the project were taken at various times. A portion of the street illustrating the irregularity of the grade and the loose and pulverized condition of the surface material is shown in Fig. 9. Another view taken at the same location about six months after construction was completed shows the improvement that was obtained. (See Fig. 10.)

### Costs

A cost summary of all expenditures on this project is given on the following page.

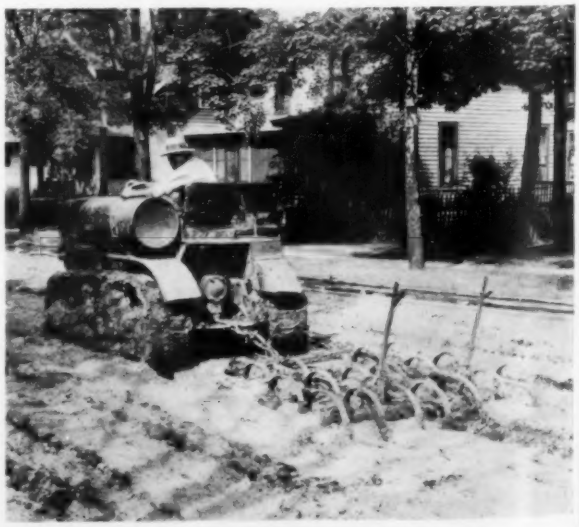


FIG. 7.—MIXING THE MATERIALS ON THE STREET

COST SUMMARY

| | |
|---|---|
| *Straight curbing cost for 12,633.05 lineal feet* | |
| Mixer rental | $93.00 |
| Form rental | 65.00 |
| Gravel, 359¼ cu. yds. at $1.65 | 593.59 |
| Cement, 424¼ bbls. at $1.80 | 764.10 |
| Labor, 4,155 man-hours | 1,400.93 |
| Miscellaneous | 187.41 |
| Total | $3,104.03 |
| Unit cost per lineal foot = $0.245. Labor, percentage of total = 45 per cent. | |
| *Curved curbing cost for 1,646.76 lineal feet* | |
| Mixer rental, donated by county | 0.00 |
| Gravel, 47¼ cu. yds. at $1.65 | 77.97 |
| Cement, 65 bbls. at $1.80 | 118.00 |
| Labor, 880 man-hours | 277.80 |
| Miscellaneous | 93.27 |
| Total | $567.04 |
| Unit cost per lineal foot = $0.345. Labor, percentage of total = 48 per cent. | |
| *Excavation cost for 11,719.5 cubic yards* | |
| Labor, 8,456 man-hours | $2,537.00 |
| Trucking, including drivers | 2,004.75 |
| Miscellaneous | 283.30 |
| Total | $4,825.05 |
| Unit cost per cubic yard = $0.41. Labor, including truck drivers, percentage of total = 73 per cent. | |
| *Preparation of base course and gravel surface 28,254.14 square yards* | |
| Trucking clay, sand and gravel, including drivers | $875.66 |
| Machine work | 1,412.84 |
| Labor, 2,028 man hours | 608.63 |
| Gravel | 1,630.99 |
| Miscellaneous | 388.52 |
| Total | $4,916.64 |
| Unit cost per square yard = $0.17. Labor, including drivers and machine operators = 27 per cent. | |
| *Sixty-four catch-basins constructed* | |
| Labor, 588½ hours at $0.30 | $176.48 |
| Miscellaneous materials | 1,040.87 |
| Total | $1,217.35 |
| Unit cost = $19.00 each. Labor, percentage of total = 14 per cent. | |

## Unemployed Labor Used

Five hundred and twenty man-weeks of labor, at thirty hours per week, were supplied by this job. Cooperation between the local welfare organization and the city officials served to distribute the work among the most needy families. Of the total amount of money spent on the project, over 43 per cent went directly to employment of local labor.

The saving that resulted from the use of the sand-clay base instead of a full gravel street is shown in the computations below. This reduction in expense comprises two items. The first is due to the difference in cost between the sand-clay base and the gravel which it replaces. The second saving results from the fact that less excavation of sand was necessary for the sand-clay base than would have been required for the full gravel type of construction.

| | | | |
|---|---|---|---|
| Item 1. | *Saving due to replacement of gravel with sand-clay base* | | |
| | Cost of gravel for a full 6 in. compacted surface, at $1.40 per cu. yd | $8,800 | |
| | Cost of sand-clay base with sand-clay gravel wearing surface | 4,900 | |
| | Saving due to substitution of sand-clay for gravel | | $3,900 |
| Item 2. | Saving due to reduction in excavation amounting to 3,140 cu. yds | | 1,300 |
| | Total reduction in expense | | $5,200 |

## Summary

This project has served to convince the officials of the city of Midland of certain outstanding facts which may

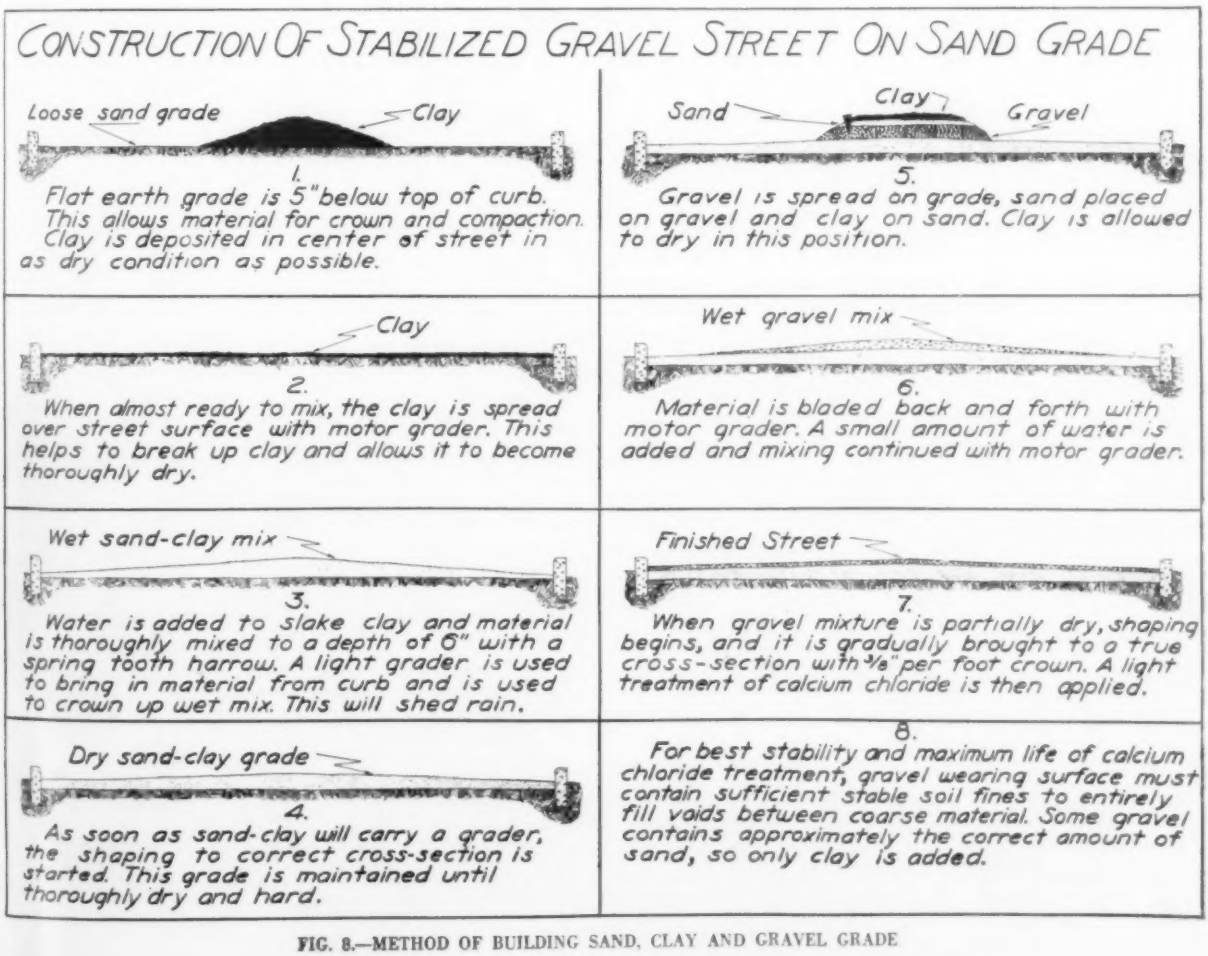

CONSTRUCTION OF STABILIZED GRAVEL STREET ON SAND GRADE
Loose sand grade
Clay
1.
Flat earth grade is 5" below top of curb. This allows material for crown and compaction. Clay is deposited in center of street in as dry condition as possible.
Clay
2.
When almost ready to mix, the clay is spread over street surface with motor grader. This helps to break up clay and allows it to become thoroughly dry.
Wet sand-clay mix
3.
Water is added to slake clay and material is thoroughly mixed to a depth of 6" with a spring tooth harrow. A light grader is used to bring in material from curb and is used to crown up wet mix. This will shed rain.
Dry sand-clay grade
4.
As soon as sand-clay will carry a grader, the shaping to correct cross-section is started. This grade is maintained until thoroughly dry and hard.
Sand
Clay
Gravel
5.
Gravel is spread on grade, sand placed on gravel and clay on sand. Clay is allowed to dry in this position.
Wet gravel mix
6.
Material is bladed back and forth with motor grader. A small amount of water is added and mixing continued with motor grader.
Finished Street
7.
When gravel mixture is partially dry, shaping begins, and it is gradually brought to a true cross-section with ⅛" per foot crown. A light treatment of calcium chloride is then applied.
8.
For best stability and maximum life of calcium chloride treatment, gravel wearing surface must contain sufficient stable soil fines to entirely fill voids between coarse material. Some gravel contains approximately the correct amount of sand, so only clay is added.

FIG. 8.—METHOD OF BUILDING SAND, CLAY AND GRAVEL GRADE

FIG. 9—BUTTLES STREET BEFORE IMPROVEMENT

FIG. 10—BUTTLES STREET AFTER CONSTRUCTION OF STABLE BASE AND WEARING SURFACE

be briefly summarized as follows:

1. This type of low-cost sand-clay gravel street is an economical investment that amply fulfills the need of residence districts having moderate traffic.

2. A satisfactory proportion of the expense that was involved in construction furnished employment for local labor.

3. It can be easily maintained in a smooth condition at a low expense.

4. Retention of calcium chloride is more satisfactory in this type of surface than when ordinary unbound gravel is used. Thus a continuously dustless surface is provided at a low cost.

EDITORIAL NOTE.—Figures 6, 7, 8, 9 and 10 are copyrighted by the Dow Chemical Company and are used in this article by permission of the company.

## Kansas Cities Required to Fund Floating Debts and Operate on Cash Basis

A NEW Kansas statute, House Bill No. 745, which took effect March 31, requires all municipalities in the state to refinance and turn all outstanding indebtedness as of April 30 into bonds, and on May 1 to begin to operate on a cash basis. Various steps in the refinancing process are scheduled during May and June. After May 1 a city must have cash in the treasury at the time a debt is created or a warrant drawn, thus practically doing away with registered warrants.

The rigors of this act are qualified by the following portions of Section 16, which will presumably be definitely interpreted by the courts:

"The provisions of this act shall not apply to contracts and indebtedness created, the payment for which has been authorized by a vote of the electors of the municipality, or where provision has been made for payment by the issuance of bonds as provided by law. The provisions of this act shall not apply to expenditures made for municipal-owned and operated utilities. The provisions of this act shall not apply to expenditures made in cases of extraordinary emergencies such as relief to the poor, the relief of destitution occasioned by famine, floods, fire, pestilence and vis major. . . . The board of education of any city, the board of regents of any municipal university, the school board of any school district, and the board of trustees of any high school may enter into contracts for teachers and other necessary employees, and continuing operating expenses in excess of the amount of funds actually on hand for that purpose: provided, the total amount payable under all such contracts in force shall never exceed the amount actually expended for school purposes for the last preceding fiscal year during which school was conducted."

NOTE.—The Kansas League of Municipalities has prepared a 38-page booklet, Bulletin 92C, giving the text of the law, a brief discussion, and a description of the procedure, with forms, for putting the law into effect. It is obtainable for $2.50 from the League at Lawrence, Kansas.

## Costs per Person for City Services Explained

IN the Annual Letter Report of the city of East Cleveland, Ohio, issued April 1, 1933, Charles A. Carran, City Manager, has included a tabulation of the costs per person of all city services for the current year. The table, here reproduced, shows the amount of such costs paid by general taxes and the amount paid out of other revenues, such as license fees, permits and court costs.

The figures in the table, says the report, include all city revenue and all expenditures as provided in the 1933 city budget. It will be interesting for you to compare the costs of these services with your yearly expenditures for automobile upkeep, light, gas, telephone and other services and commodities. For example, the table shows that the city makes 130 collections of garbage and rubbish per year at each household for $1.25 a person, an average total cost of less than one cent per person per collection. Fifty-eight cents of this expense is met by miscellaneous revenues, and only 67 cents —about one-half cent per person per collection—is paid by general taxes."

COST PER PERSON OF ALL CITY SERVICES IN 1933

| City Services | Paid by Your General Taxes | Paid by Other Revenue | Total Cost |
|---|---|---|---|
| Garbage and rubbish collections | $0.67 | $0.58 | $1.25 |
| Police protection | 1.79 | 0.95 | 2.74 |
| Fire protection | 1.24 | 0.66 | 1.90 |
| Street lighting | 0.73 | 0.42 | 1.15 |
| Sewer maintenance and sewage disposal | 0.77 | 0.61 | 1.38 |
| Law, finance and general administration | 0.47 | 0.27 | 0.74 |
| State examiners, elections, workmen's compensation | 0.43 | 0 | 0.43 |
| Health and welfare | 0.25 | 0.15 | 0.40 |
| Parks and city lands and buildings | 0.18 | 0.11 | 0.29 |
| Traffic signals and regulations | 0 | 0.23 | 0.23 |
| Street cleaning and snow removal | 0 | 0.35 | 0.35 |
| Street repair and maintenance | 0 | 1.11 | 1.11 |
| All other city services | 0.35 | 0.21 | 0.56 |
| Total cost per person of all city services | $6.88 | $5.65 | $12.53 |

# The Water Supply for Boulder City, Nevada

*By* W. R. NELSON

**Assistant Engineer,**
**Boulder Canyon Project,**
**U. S. Bureau of Reclamation**

AFTER a decision had been made, for reasons of climate, accessibility, and from the standpoint of health of the workers, to locate the construction camp for the Boulder Canyon project at the present site of Boulder City, Nev., the Government had to procure an acceptable water supply for the camp.

Two sources were available—one from artesian wells located in the basin near Las Vegas and the other from the Colorado River. Water from the wells in the Las Vegas plain was clear and free from bacteria, but possessed an average hardness of 633 parts per million. The pressure line to Boulder City from an assured source of adequate supply would be approximately 25 miles in length, and pumps would be required to lift the water a difference in elevation of 600 feet.

Colorado River water possessed an average hardness of 367 parts per million, the source of supply was 6 miles from Boulder City, and pumps would be required to lift the water from low river elevation 645 feet to the top of the storage tank in Boulder City at 2,670, a difference of 2,025 feet in elevation. Additional disadvantages of river water were its high silt content, an average of 6,000 of procuring an acceptable water supply for the use of the camp.

## Colorado River Water Selected for the Supply

Studies were made of both sources, and it was decided to use the river water principally because the supply was sufficient and determinable, and the estimated cost of the system was nearly $200,000 under that for the artesian supply. There was also grave danger, if the Las Vegas Basin supplied Boulder City as well as the Las Vegas Valley, that the additional water requirement might deplete the underground basin storage to such an extent that a shortage would result.

To obtain acceptable water for domestic use, it has been found necessary to remove the silt from the river water, soften it to approximately 100 parts per million of hardness, and treat it chemically to destroy harmful bacteria. The lift of 2,025 feet from low-water surface at the river to a storage tank in Boulder City is provided by four pumping stations—the first by the intake plant from the river to a pre-sedimentation basin, the second by pumping plant No. 1, which forces the water to pumping plant No. 2, which in turn lifts the water to a receiving tank in Boulder City. From this tank it flows by gravity to the filtration plant, and from there it is pumped into the distribution line or to the storage tank.

The location for the intake pumping plant was selected downstream about 3,000 feet from the dam site, at the mouth of Water Trail Canyon, where a break in the wall of Black Canyon extends westward toward Boulder City. Some time in the future the intake will be moved to a point upstream from the dam, after this structure is completed, in order to procure clear water and take advantage of the higher water surface in the reservoir, thus eliminating a certain amount of pumping and the necessity for removal of silt.

THE MAJOR UNITS OF THE BOULDER CITY WATER SUPPLY
View from west, showing 2,000,000-gallon storage tank on hill, 100,000-gallon receiving tank with aerator at foot of hill, and treating and filtration plant at right

## Intake Plant

The intake plant consists of three 550-gallon-per-minute, 115-foot head centrifugal pumps, each operated by a 25-horsepower induction motor. The pumps and equipment are mounted on a carriage which is supported and moved on four wheels, running on 45-pound rails, laid 7 feet apart on a 47½° incline. The carriage is raised or lowered by an electrical hoist to suit the stage of the river. A 10-inch diameter cast iron pipe, with 8-inch laterals at 9½-foot intervals for connection to the discharge side of the pumps, is laid between the rails and leads to a 225,000-gallon pre-sedimentation basin located at the mouth of Water Trail Canyon.

This pre-sedimentation basin is 13 feet high, 55 by 55 feet inside dimensions, and is situated with its base at elevation 734. Approximately 97 per cent of the silt is removed here by a detention period of two and a half hours. The basin is equipped with a traction clarifier and a 94-gallon-per-minute sludge pump for removal of the settled solids. On a basis of 500,000 gallons of water flowing through the sedimentation tank in 24 hours, the sludge pump will be required to remove nearly 15 tons of solids.

From the pre-sedimentation basin the clarified water flows by gravity to a 30,000-gallon sump tank, from which it is lifted by the three 500-gallons-per-minute, 1,150-foot head centrifugal pumps of plant No. 1, the power being furnished by three 200-horsepower induction motors, through 3.9 miles of steel pipe, the first 1,834 feet of which is 10-inch inside diameter and the remainder 12-inch, to pumping plant No. 2. This line is laid from elevation 726 at the pumps of plant No. 1, to elevation 1,712 at the pumps of No. 2. The trench for the pipe was excavated for more than half the distance in solid rock and the pipe laid by the Wheelwright Construction Co., of Ogden, Utah, during the summer of 1931, when it was

necessary that all work be done at night or in the early hours of the morning on account of high temperatures. During the day all steel exposed to the sun would blister the hands when touched and the temperature in the trenches would rise to nearly 150°.

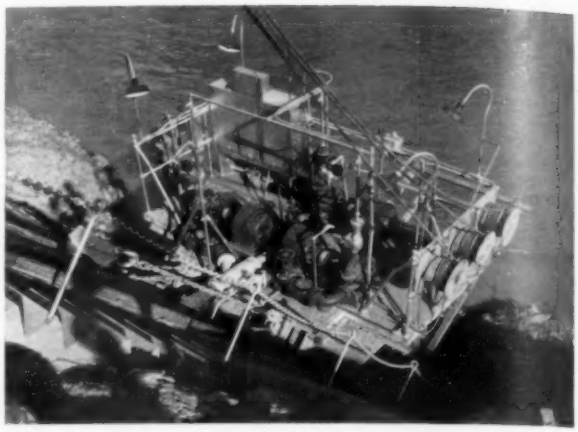
The profile of the pipe line has three sharp changes in its grade, where automatic air valves are installed, and one summit where an air vent has been placed. Two gate valves have been provided at low points on the line for drainage purposes, and immediately preceding the entrance of the pipe into plant No. 2 a steel tank of 4 feet inside diameter and 95 feet high serves to equalize the flow through the two high-head pumping stations.

Pumping plant No. 2 is equipped with the same type and number of pumps as in plant No. 1 and is likewise housed in a structural steel building. The walls and roof of the building are respectively of tile and metal lath stucco, differing from those of plant No. 1, where the walls and roof are of "Transite," an asbestos fiber composition. The pipe line is protected from surges and water hammer by means of automatic surge suppressors, one of which is installed near the lower end of each section of the pipe line. These surge suppressors open automatically upon a drop in pressure such as that caused by the dropping of the pumps upon failure of power supply, and they remain open a sufficient period of time to permit the surge to damp itself out, after which the surge suppressors close at a very slow rate. All the pumps are automatically controlled by means of pressure or float switches.

### Water Treatment

Water from pumping plant No. 2 flows through 2.7 miles of steel pipe, the first 3,050 feet of which is 10-inch inside diameter and the remainder 12-inch, to an aerator installed at the top of a 100,000-gallon steel receiving tank in Boulder City. The maximum static lift between these two stations amounts to 824 feet, as the inlet to the aerator is at elevation 2,554.

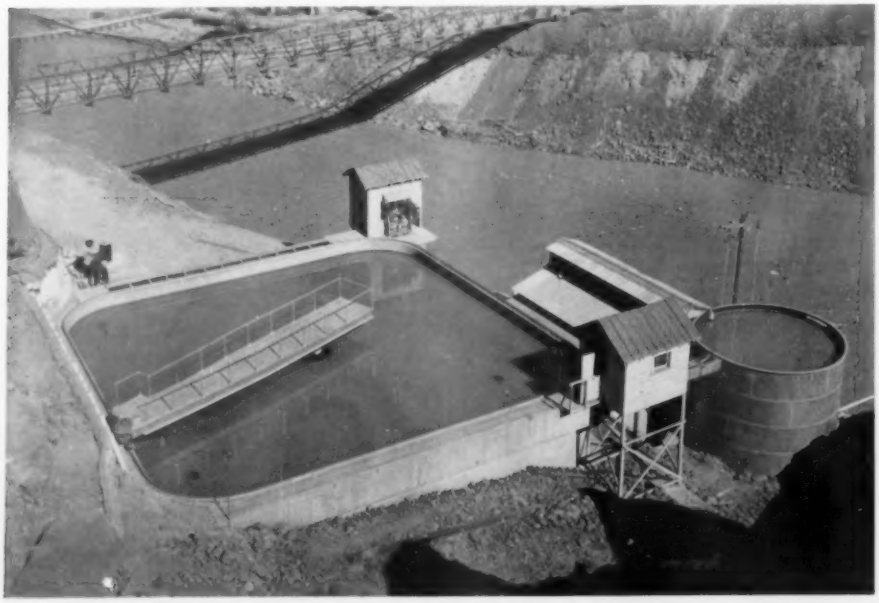
The aerator consists primarily of a tank 7 feet in diameter, having outlets through U-shaped pipes to the centers of two horizontal circular plates of approximately 36 inches in diameter and equipped with small vertical baffles. The water is aerated in its passage over the vertical baffles to the edges of the circular plates and in its fall of 6 feet or more to the water surface in the receiving tank.



THE RIVER INTAKE PUMPING PLANT, WITH PUMPS OPERATING AT BOTTOM OF INCLINE
Showing carriage mounting so that pumps can operate at any stage of the river

The aerated water flows by gravity from the receiving tank to the filtration plant, where it is submitted to complete clarifying, chemical, and filtering processes, emerging at the end of this treatment perfectly clear, entirely free from harmful bacteria, and with hardness reduced to about 100 parts per million. There are now only five of this type of filtration plants in existence, and the water-softening features observed here will be found only in those plants that have been designed within the last two years.

The treated water from the clear well of the filtration plant is pumped by three 600-gallons-per-minute pumps, powered by 30-horsepower induction motors, against a maximum static head of 160 feet, to a storage tank of 2,000,000 gallons capacity located on a hill northeast of the plant. The storage tank, situated on Water Tank Hill,



THE PRE-SEDIMENTATION TANK AT THE RIVER INTAKE

on the northerly edge of Boulder City, has an inside diameter of 100 feet and a height of 35 feet. Its walls are of 5/16 to 7/8-inch steel plates, the floor is composed of 1/4-inch steel plates resting on a concrete floor slab and sand cushion, and the roof is made up of 10-gage steel plates supported laterally by 10- and 15-inch channels bearing on 15 columns, each constructed of two 12-inch channels.

The water-supply system is placed in operation by starting the pumps at the intake station and the pre-sedimentation tank equipment. The clarified water discharging into the sump tank actuates a float-control switch placing in operation the number of pumps in plant No. 1 that were pre-set for starting. Water raising in the equalizing tank at plant No. 2 operates a pressure-control switch, when sufficient head has been developed, and places in operation the pumps in plant No. 2 that are in starting position. The equipment at the filtration plant is manually controlled, with the exception of the three pumps which force the water from the plant to the storage tank. These are started by three float-controlled switches, located in the clear well. To shut down the system, the intake pumps are stopped, and all other stations automatically cease operating as the water supply is cut off.

A complete distribution system covers the entire occupied area of Boulder City and is so designed and laid out that all mains are in loops and there are no dead ends. The distribution system is supplied by two mains each consisting of a 12-inch cast iron pipe from the main storage tank. Cast iron mains, 4 to 10 inches in diameter, branch from the main supply lines in each intersecting street. Service connections from mains to consumers are 3/4- to 1 1/2-inch copper tubing. Fire protection for the town is provided by 89 fire hydrants and by 2-inch and 4-inch stand-pipes in dormitories and public buildings. Nearly 13 miles of mains and more than 15 miles of service lines have been laid to date. The static pressure for the distribution system varies from 90 feet in the buildings at the north side of town to 220 feet at the south, the average being 160 feet, or nearly 70 pounds per square inch.

Water pumped from the river at the present time amounts to approximately 15,860,000 gallons per month, requiring 200,400 kilowatt-hours of electrical power for pumping purposes. All water used in Boulder City is on a metered service. The cost of the supply, treating, and distribution system totaled approximately $470,000.

ACKNOWLEDGMENT.—The illustrations in this article are used by courtesy of the U. S. Bureau of Reclamation.

# Building Low-Cost Roads in Pennsylvania

*By* SAMUEL S. LEWIS

**Secretary, Pennsylvania Department of Highways**

SURVEY and inspection expense on low-cost road construction in Pennsylvania has been practically eliminated, because the projects have been placed under the supervision of qualified employees who are familiar with common engineering practices. The policy pursued in the low-cost improvement is, first, to perform the necessary rough grading, by means of power graders, steam shovels, tractor-drawn graders, and other suitable equipment. The necessary drainage is then taken care of, especially pipes and small bridges. Before proceeding to place the base, particular attention is paid to throwing up ample shoulders.

## Foundations

As the soils in Pennsylvania vary from mica silt, clay loams and sandy loams, to sand, gravel and shale, the depth of foundation for the finished surface will also vary throughout the state. In some cases, the base and wearing surface are constructed as one course. On a large part of the mileage the base is of native stone knapped in place. This stone must withstand rolling and must not disintegrate under extreme variations in temperature. It has been found along Pennsylvania highways in the fields, on the mountainsides, and in the valleys adjacent to streams, and in some cases is blasted from rock faces adjacent to the highways. One of the principal sources of supply of this material is to be found in fence rows and in piles of stones in fields thrown up years ago by pioneer settlers clearing the land. In some cases where native stone of this variety is not available, there may be found deposits of gravel, flint and shale. Advantage has also been taken of crushed and granulated slag cinders, and "red dog," which is the result of the incineration of coal culm banks. Where materials are used other than native stone napped in place, screening is not stipulated for flint or "red dog," since they naturally are of smaller sizes. On run-of-bank gravel, run-of-crusher slag, or commercial run-of-crusher stone, it is specified that this material shall pass a 4-inch circular opening with not more than 15 per cent passing a 1 1/4-inch circular opening. In the case of run-of-bank gravel where an excess of large size is apparent, the maximum size is further reduced. These materials are spread on the finished subgrade by means of spreader boxes attached to trucks.

The voids in the knapped stone base are filled by additional smaller fragments of stone or by fine gravel, crushed or granulated slag, or cinders, and in a few cases where these materials are not available clay is used. All bases are thoroughly rolled and compacted by power rollers.

## Surfacing Methods

The surface on these roads is an oilbound macadam wearing surface, or a heavy surface treatment, or a so-called retread mixed in place. Attention is particularly called to the oilbound macadam surface course developed by the Pennsylvania Department of Highways and used extensively in the construction of low-cost highways. A specified grading of 3/4-inch commercial stone is spread so that a 2-inch compressed depth is obtained. After the stone has been thoroughly rolled, from 0.75- to 1.0 gallon per square yard of bituminous material is put on in two applications. After the surface has been dragged and rolled to a uniform cross-section and allowed to dry from 24 to 36 hours, a third application, or seal coat, is made at the rate of 0.25-gallon per square yard, after which

there is spread uniformly over the finished surface ½-inch commercial size stone at the rate of approximately 20 pounds per square yard. This is again rolled until the surface is thoroughly compacted and the project is ready to be thrown open to traffic. Under certain favorable conditions, the native stone base is given only a heavy surface treatment, which consists of commercial stone of a specified grading and an application of bituminous material varying from 0.7 to 1.0 gallon per square yard.

Where retreads are used for the finished surface, the mixed-in-place method has been adopted, because it is believed to be the most economical under conditions existing in Pennsylvania. Experiments have been undertaken with a precoated material, the results of which are looked forward to with a great deal of interest.

There are, of course, a large number of variations from the standard or established practices. These are made necessary by reason of the many classes of materials, by soil conditions, cost of materials, grading of the aggregates as found in native conditions, as well as the presence of water, and in some cases are controlled by the shade of trees constantly covering sections of the highways.

ACKNOWLEDGMENT.—From a paper presented before the Tenth Annual Asphalt Paving Conference.

# The Maintenance of Water Meters

*By* **CHARLES W. DAVIS, JR.**

**Superintendent, Water Department, Petersburg, Va.**

PETERSBURG is standardizing on one make of meter, but at present there are several types of meters in use. Realizing the advantages to be gained through the use of a meter of standard construction, we are weeding out all other makes, as rapidly as possible. Not only is the use of a standard type of meter an aid to maintenance because it does away with the need of carrying in stock a large supply of meter parts, but it also makes reading much easier, and the chance of mistakes on the part of the meter reader is lessened materially.

### Organization

At present Petersburg has 6,200 meters in service; these range in size from ⅝-inch to 6-inch. Six men compose the meter department, two colored and four white. The white men attend to the reading of the meters; they set meters and make taps, also remove, repair and test meters that have stopped registering. The two colored men assist the white men and look after any leaks that develop.

Because the meter crew is small, periodic tests of meters are not made, but as the meters are read each month, they are inspected and any that have stopped registering are removed for repairs. This proves satisfactory as a means of locating those needing attention. When the meters are removed, they are brought to the meter shop, where they are dismantled, repaired and tested.

### The Meter Repair Shop

In 1924 the city purchased a meter test bench, so that when repairs are made, tests under working conditions may also be made and an accurate idea of what may be expected can be gained. A portable outfit that can be used at the location of the meter was purchased for tests where consumers complain that their meters are not registering properly.

Several years ago I was sent to a meter factory from which we purchased meters and there I learned how they are built; I also learned much about the testing and repairing of meters. Before this visit to the factory we were repairing meters with new parts; after spending two weeks at the factory I found that this method was not only wrong but very wasteful. It was learned that parts from one meter may be used in another, provided a standard meter is used. We had been discarding many meter parts that still were good for much more use. For example, if a register is badly clogged and the hands are broken off, it may be repaired if taken apart and cleaned thoroughly with acid and water. The list price of a new register is $3.50, but by rebuilding them much of this can be saved. The same is true of gear trains. The list price on this part is $5.30. Repairing them amounts to a considerable saving, made possible by taking the gear trains apart and cleaning them with acid and water. Many times most of the trains can be used again and only a few gears must be replaced.

Very little can be done to repair the old type piston, but the new type three-price piston offers many opportunities for saving. The ball is usually good and only the disc plate need be ordered. The list price of the plate is $1.15, as compared to $2.40 for the entire piston.

To facilitate this repair service, which has more than repaid what it has cost to institute it, we have standardized on a meter that uses interchangeable parts. Thus, a meter built years ago is enough like a meter built now to permit the use of the same parts. The meter adopted is easy to repair; all the tools necessary are a screw driver and a socket wrench. We repair an average of 200 meters per year. The average cost of making these repairs is around $2.70 per meter. This may seem high, but when it is realized that most of them are older models with open gear trains and that when repairs are made oil-immersed gear trains are put in place of them, it is not such a considerable item.

Money can be saved by rebuilding old meters and by using parts taken from old meters. Maintenance costs can be reduced by purchasing meters of good reputation. Don't buy a meter just because it is cheap. Buy a meter upon which you can depend, and above all, use a meter that is standard, one that has interchangeable parts. Pay strict attention to details of meter maintenance, and the results will be surprising.

ACKNOWLEDGMENT.—From a paper presented before the Virginia Water and Sewage Works Association.

# A Survey of Refuse Disposal in Los Angeles

*By* JOHN R. TAYLOR
**Superintendent of Refuse Collection**

REFUSE disposal in Los Angeles includes garbage collection, incombustible rubbish collection, dead animal collection, and the incineration of combustible rubbish. Garbage is collected from the central portion of the city and the West Los Angeles District by city forces and shipped by rail to a hog ranch 55 miles from the city. The hog ranch pays the city 50 cents per ton for the garbage f.o.b. railway cars.

Since the decrease in market value of hogs to an all-time low level, the hog ranch has asked for an adjustment in payment, and a moratorium has been granted. Hospitals, large restaurants, and hotels receive daily garbage collection; close-in business and apartment houses receive three collections a week, and residential districts have twice-a-week collection. Most of the collections are made in the daytime, starting at 6:30 A. M. The Los Angeles and Hollywood business districts have collection at night, starting at 6 o'clock. The close-in area is collected by mule teams with one man acting as driver and loader. Areas further removed from the loading station have collection by motor trucks with a crew of one driver and two collectors. The distance from the garbage loading station varies from 0 to 7 miles for the team route and from 3.5 to 23 miles for the truck routes.

Garbage and incombustible rubbish in the outlying communities are collected by city collectors, who are paid for their services in part by the city and in part by the revenue they receive from the garbage which is used as hog feed.

Incombustible rubbish is collected bi-weekly by city forces from Los Angeles proper and the West Los Angeles District. Up to June 1, 1932, the rubbish was given to a salvage company for disposal. Since that time, however, it has been necessary to dispose of the rubbish by dumping it in an abandoned gravel-pit at a cost of $1 per load for the dumping privilege. The salvage company ceased operations because the business was no longer profitable with the present low market values of the salvaged articles, such as scrap metals, bottles and baled tin cans.

In the outlying communities incombustible rubbish is collected by city contractors from once a week to once a month, according to the density of population. Disposal is by dumping on low ground. Dead animals are collected by three hearses, two of which have delivery bodies for small animal collection. One has a special body for the collection of large animals.

Combustible rubbish collected by private contractors is burned at the municipal incinerator, for which a charge of $1 per ton is made to the private contractors. Some of the market refuse from the large vegetable markets is also incinerated. The municipal incinerator was built by the Nye Incinerator Co. at a cost of $420,000 and put into operation in August, 1927.

All the men employed in garbage and rubbish collection and in operating the incinerator are Negroes, excepting the clerks, mechanics, foremen and superintendents. Starting May 10, 1932, these men were placed on a 5-day week and additional relief men were employed where necessary.

ONE OF THE 6-WHEEL, 2½-TON MORELAND COLLECTION TRUCKS

REFUSE COLLECTION AND DISPOSAL COSTS FOR FISCAL YEAR 1931-32

| | Los Angeles Garbage | | West Los Angeles Garbage | | Incombustible Rubbish | |
|---|---|---|---|---|---|---|
| | Total Cost | Cost per Ton | Total Cost | Cost per Ton | Total Cost | Cost per Cu. Yd |
| Salaries | $488,754.29 | $2.92 | ..... | ..... | $208,691.27 | $.69 |
| Materials and supplies | 34,801.48 | .21 | ..... | ..... | 4,291.87 | .01 |
| Equipment operating costs, including depreciation | 82,153.50 | .49 | ..... | ..... | 53,869.20 | .18 |
| Depreciation of buildings | 1,668.00 | .01 | ..... | ..... | 444.00 | ..... |
| Interest | 15,506.04 | .09 | ..... | ..... | 5,028.72 | .02 |
| Gross cost | 622,883.11 | 3.72 | $40,309.25 | $3.38 | 272,325.06 | .90 |
| Garbage sales (revenue) | 80,386.89 | .48 | 1,896.00 | .16 | 0.00 | .00 |
| Net cost | 542,496.22 | 3.24 | 38,413.25 | 3.22 | 272,325.06 | .90 |
| Quantity collected | 167,626.92 tons | | 11,916.61 tons | | 304,537.00 cu. yds. | |

COMPARISON OF GARBAGE AND RUBBISH COLLECTION NOT INCLUDING SUBURBS

| Year | Tons Garbage Collected | Per Cent Increase Over Previous Year | Cu. Yds. Rubbish Collected | Per Cent Increase Over Previous Year |
|---|---|---|---|---|
| 1922-23 | 99,851 | ..... | 98,285 | ..... |
| 1923-24 | 130,866 | 31.06 | 136,804 | 39.19 |
| 1924-25 | 135,125 | 3.25 | 156,626 | 14.48 |
| 1925-26 | 137,058 | 1.42 | 169,904 | 8.47 |
| 1926-27 | 139,082 | 1.48 | 183,274 | 7.86 |
| 1927-28 | 147,215 | 5.84 | 217,551 | 18.70 |
| 1928-29 | 158,801 | 7.87 | 239,278 | 9.98 |
| 1929-30 | 159,095 | 0.18 | 272,958 | 14.07 |
| 1930-31 | 164,963 | 3.68 | 290,723 | 6.50 |
| 1931-32 | 167,627 | 1.62 | 304,537 | 4.75 |

MUNICIPAL INCINERATOR OPERATION COSTS FOR FISCAL YEAR 1931-32

| | Total Cost | Cost per Ton |
|---|---|---|
| Salaries | $40,633.55 | $.796 |
| Materials and supplies | 1,950.92 | .038 |
| Water | 323.85 | .006 |
| Gas | 162.92 | .003 |
| Power | 1,531.42 | .030 |
| Repairs to incinerator | 8,680.45 | .170 |
| Auto equipment | 5,373.60 | .105 |
| Miscellaneous | 277.70 | .005 |
| Depreciation | 26,664.00 | .525 |
| Gross cost | 85,598.41 | 1.678 |
| Revenue | 50,273.00 | .986 |
| Net cost | 35,323.41 | .692 |

Tons burned: 50,998.37

COMPARATIVE OPERATING STATEMENT—MUNICIPAL INCINERATOR

| Fiscal Year | Operating Cost | Depreciation | Gross Cost | Total Revenue | Tons Burned |
|---|---|---|---|---|---|
| 1927-28 | $29,081.95 | $28,897.50 | $57,979.45 | $32,511.96 | 32,469.10 |
| 1928-29 | 55,928.96 | 27,997.10 | 83,926.06 | 42,479.14 | 42,419.85 |
| 1929-30 | 68,195.65 | 27,962.56 | 96,158.21 | 54,734.09 | 54,828.55 |
| 1930-31 | 56,140.03 | 27,996.00 | 84,136.03 | 51,052.33 | 51,283.21 |
| 1931-32 | 58,934.41 | 26,664.00 | 85,598.41 | 50,273.00 | 50,998.37 |

Dead animals, as shown above, do not include those collected from the San Fernando Valley, Venice, San Pedro and Wilmington. The dead animals are sold to a fertilizer manufacturing company for $25 per month. In former years they sold for $105 per month.

A 3½-TON MORELAND TRACTOR TRUCK WITH A 10-TON NEWCOMER-FREUHAUF SEMI-TRAILER
A third tank is now mounted above the fifth wheel to increase the hauling capacity

## A Refuse Collection Survey One Year Ago

A survey of the garbage and rubbish collection routes was made in December, 1931, and many valuable data obtained. The data have been used to revise the routes in order to eliminate overtime and undertime, to compare costs of mule team and truck operation, etc. The survey was made by construction inspectors, surveyors, and others whose work was slack at that time of the year. A summary of the data obtained is given below, compared with a similar survey made in February, 1919. Surveys of this type are invaluable in checking the effieciency of operation of such an important public utility as the collection and disposal of municipal refuse.

AVERAGE PERFORMANCE OF REFUSE COLLECTION VEHICLES
FISCAL YEAR 1931-32

| | Refuse Survey, December, 1931 | | | Refuse Survey, February, 1919 | |
|---|---|---|---|---|---|
| | Garbage Collection Teams | Garbage Collection Trucks | Can Collection Trucks | Garbage Collection Teams | Garbage Collection Trucks |
| Number of crews observed | 18 | 43 | 37 | 28 | 3 |
| Time to route | 1:21 | 0:33 | 0:34 | 1:14 | 0:46 |
| Miles to route | 5.3 | 7.3 | 6.8 | 4.9 | 7.64 |
| Speed to route | 3.9 mi./hr. | 13.2 mi./hr. | 12.2 mi./hr. | 3.9 mi./hr. | 9.9 mi./hr. |
| Time from route | 1:54 | 0:35 | 0:34 | 1:35 | 0:47 |
| Miles from route | 5.5 | 7.3 | 6.6 | 4.9 | 7.56 |
| Speed from route | 2.9 mi./hr. | 12.4 mi./hr. | 11.7 mi./hr. | 3.08mi./hr. | 9.66mi./hr. |
| Time on route | 2:52 | 2:33 | 2:06 | 3:57 | 2:55 |
| Miles on route | 3.7 | 6.6 | 6.3 (Av. of 8 only) | ... | ... |
| Speed on route | 1.3 mi./hr. | 2.6 mi./hr. | 3.0 mi./hr. | ... | ... |
| Pick-ups per load | 261 | 359 | 213 | 333 | 432 |
| Pick-ups per hour | 91 | 141 | 102 | 84 | 148 |
| Weight of garbage per load | 4150 lbs. | 5410 lbs. | †3802 lbs. (11.7 cu. yds.) | 3300 lbs. | 4250 lbs. |
| Pounds picked up per hour | 1466 | 2120 | 1800 | 836 | 1456 |
| Pounds per pick-up | 15.9 | 15.0 | 17.8 | 9.9 | 9.8 |
| Pounds picked up per day | 4150 | 11,167 | †7995 (24.6 cu. yds.) | 3300 | 7540 |
| *Cost of collection per ton | $4.82 | $4.83 | $6.75 | $4.85 | $6.10 |
| Cost per pick up | .0383 | .0362** | .0601 | .0218 | .0299 |

† Weight of rubbish taken as 325 pounds per cubic yard.
* Based on $27 per day for truck and crew of three men, and $10 per day for team driven by one man in 1931, and $23 and $8 respectively in 1919.
Night garbage collection, which is less expensive, is not included in above figures.
** Cost per pick-up varies from 2 cents in the close-in districts to 8 cents in the hilly outlying districts.

During the survey of 1931 seven of the mule-team routes were collected by trucks as a check on operation costs with the following average results:

| | Hours per Route | Cost for Route | Tons Collected | Cost per Ton | No. of Pick-ups | Cost per Pick-up |
|---|---|---|---|---|---|---|
| Teams | 8 | $10.00 | 2.28 | $4.38 | 219 | $.045 |
| Trucks | 2.65 | 8.95 | 2.08 | 4.30 | 191 | .046 |

Letters of comment from the inspectors on the survey were almost unanimous in complimenting the collection crews on being so efficient, industrious and courteous to the public. Suggestions were given for minor changes and improvements, but practically all the inspectors stated that, in general, the collection system was working smoothly and efficiently accomplishing the desired result.

### Improvements in Collection Equipment

Several improvements have been made in garbage collection equipment during the last year. The garbage tanks have been changed from a vertical-side tank to a flared-side tank, so that the width across the top is 20 inches greater; the depth is 4 inches less, making them easier to load; the water-level capacity is 4.8 yards instead of 4.5 cubic yards, and the heaped-up capacity without sideboards is 8,000 pounds instead of 6,000 pounds. The flared body is easier to unload because the garbage does not cling to the corners. The rear end extends 4 inches above the sides to prevent the garbage from slopping over the rear when the truck starts.

Twenty-two new garbage collection trucks were purchased during the past fiscal year, ten of which were 3-ton four-wheel trucks; ten were 2½-ton, six-wheel trucks; one was a 5-ton, four-wheel low-bed truck; and one was a 3½-ton tractor truck with a 10-ton low-bed semi-trailer. The last three types are new to the Department and have not been in use long enough to determine their operating costs with any degree of accuracy.

The six-wheel trucks have much smaller wheels and tires than the conventional four-wheel trucks. This gives a lower frame height and consequently a lower loading edge with a saving in labor. The two rear axles are able to carry the load, although the truck is a smaller unit throughout and of lower first cost than the conventional four-wheel truck of equal capacity. The two rear axles are trunnion-mounted, so that road irregularities are smoothed out and a higher speed may be maintained with safety.

The low-bed truck is of conventional design, except that the frame is only about 20 inches above the ground, which makes it possible to use a deep garbage tank and still have a low loading edge. A special garbage tank is used, with a hump in the bottom to clear the differential, which rises about 6 inches above the frame. The tank has a capacity of 6 cubic yards level full and carries about 10,000 pounds of garbage.

The 3½-ton tractor-truck hauls the low-bed semi-trailer through a fifth wheel. The frame of the semi-trailer is about 20 inches above the ground. In order to have a maximum width of garbage tank, four single tires are used on the two rear axles, there being no front axle on the semi-trailer. Two large garbage tanks are mounted on the low-bed portion of the frame, and a small tank is mounted on the yoke above the fifth wheel. The combined capacity of the three tanks is 10½ cubic yards level full. As much as 22,000 pounds of garbage has been brought in at one load, although the average is 18,000 pounds or less. This unit is especially valuable for the collection of remote areas where it is necessary to haul the garbage long distances to the garbage loading station. Owing to disease at one of the hog ranches in an outlying community, it was necessary during the latter part of 1932 to haul the West Los Angeles garbage 15 miles into the city. With the smaller units, as much time is spent traveling to and from this district as is spent on the routes, but with

the semi-trailer the entire day is spent in collecting, except the time necessary to travel out to the collection route and back to the loading station at night. As much garbage is brought in with one load on the semi-trailer as the ordinary truck brings in with three loads.

Balloon tires were specified for all the trucks purchased during 1932, but they have not been in use long enough to determine their value as compared to high-pressure tires.

The cost of the various trucks purchased during 1931 was as follows:

| | |
|---|---|
| 5½-ton tractor truck and 10-ton semi-trailer | $4,349.80 |
| 5-ton low-bed truck | 3,200.05 |
| 3-ton trucks (conventional type) | 2,550.25 |
| 2½-ton six-wheel trucks | 1,624.00 |

The cost of each of the 3-ton trucks purchased was $344.75, or 12 per cent lower than that of similar trucks purchased during the previous fiscal year.

### Repairs and Maintenance

Repairs to refuse collection trucks have been made in the past by the city's general machine shop. Considerable delay in getting repairs has been experienced at times because this shop is located a considerable distance from the garage truck sheds and is often congested with other work. A branch repair shop is now being planned at the garbage loading station where all minor repairs to the refuse collection trucks will be made. The general shops will continue to make the major repairs and will have supervision over the branch repair shop.

The mules are now being shod exclusively with rubber shoes. This prevents sore feet due to pounding on the hard pavements, and the shoes last three times as long as the iron shoes, with a consequent saving in blacksmith labor. Also, the mules' flying hoofs do not cut each other's legs when shod with rubber.

### Economies at the Incinerator

Several improvements and economies have been effected in the last year at the municipal incinerator. The ashes, which contain a large proportion of tin cans, are dumped in an abandoned gravel-pit adjoining the incinerator. In order to decrease the volume of the ashes, they are spread out near the bank of the pit and rolled with a heavy roller pulled by a tractor. Thus the tin cans are flattened and the volume of the ash decreased about 50 per cent. The ashes are then pushed into the pit with a bulldozer mounted on a crawler tractor.

A great deal of slag accumulates in the combustion chambers of the incinerator, owing to the metal scraps, cans, bottles, etc., that find their way into the incinerator with the combustible rubbish. It has been necessary in the past to shut down the furnaces about once a month and clean out the slag. This difficulty has been largely eliminated by building a brick cribbing around the entrance to the combustion chambers. The tin cans collect in the cribbing and are raked out each night. A shutdown is now necessary only about once in three months instead of once a month.

## *Southern Leaders Urge Citizens' Councils for Constructive Economy*

THAT the continued existence of a democratic society depends upon the maintenance of the educational, cultural, and social institutions which promote general education and wholesome living, was emphasized in a statement of conclusions and recommendations adopted at the Conference of Southern Leaders held April 8, 1933, at Chapel Hill, N. C., under the auspices of the American Library Association and Southeastern Library Association. "These," said the statement, "are schools, colleges, universities, libraries, museums, churches and other character-building institutions and agencies for health and welfare. The services of these institutions must be preserved.

"The South has the capacity to support all social and cultural institutions necessary to a civilized society. Its natural resources are unequaled in any other section of the country, and only proper social and economic planning are required for the realization of adequate educational, cultural, and social welfare services for all its citizens.

"The importance and the necessity of economy in all governmental and other public services are recognized. Such economy should be constructive rather than destructive. It should be appreciated that, as a result of the depression, the demands upon the social and cultural services of the Government have increased rather than lessened; this is particularly true in the case of libraries. . . .

"It is apparent that a need exists in every community for machinery which will make possible adequate consideration of the interests of the entire community, rather than of special groups. We urge the formation of a citizens' council in every community, such council to be composed of representatives of all the influential organizations in the community. A citizens' council should study the problems of local government, evaluate the various services in the light of the community interest, and work out a comprehensive plan for reduction of expenditures based upon the elimination of waste, with the preservation of essential services."

## *For Better Training of Public Servants in the Metropolitan Region*

THE establishment of a Division of Research in Public Administration, with Dr. Russell Forbes as Director, was announced on April 22 by the Department of Government of Washington Square College, New York University. In addition to its research activities and the training of undergraduate and graduate students for public service, the new Division plans as soon as practicable to undertake, at the request of public officials or organized citizens groups, surveys of specific problems affecting the organization and administration of New York City and other governmental units in the metropolitan region; and to conduct annual one-week intensive courses in municipal administration for the benefit of thirty thousand public officials of the New York metropolitan region.

Dr. Forbes was recently promoted from Associate Professor of Government of New York University to a full professorship. In addition to his academic positions, he has served in recent years as Research Secretary, National Association of Purchasing Agents; Director, Municipal Administration Service; Secretary, Governmental Research Association; and Secretary, National Municipal League. The last-named position he has just resigned to make possible the devotion of full time to his new duties.

## *Wellesley Summer Institute for Social Progress*

INFORMATION about this promising project in cooperative thinking, to be held on the Wellesley College campus July 1-15, may be obtained from Alfred D. Sheffield, 31 Madison Street, Cambridge, Mass. About 130 men and women, forming a typical cross-section of society, will join in group discussions following lectures by competent authorities on economic problems. The approach will be that of practical concern for every one and of proposals for effective action.

# Santa Barbara Builds with Distinction upon Past and Present Beauty

*By* WM. TEMPLETON JOHNSON, A.I.A.
San Diego, Calif.

IN THE BUSINESS SECTION

TWENTY years ago, most of the charm and picturesqueness of Santa Barbara was tucked away in side streets behind the eyesores of an old boom period. Today the graceful simplicity of line, the form and color that gave distinction to those bits of Spanish architecture, still emphasizes the city's individuality. It has inspired new construction that is harmonious, in architectural standards, and has stimulated artistic appreciation, which the Community Arts Association, organized in 1920, has fostered in the fields of community planning and planting, music, art and drama.

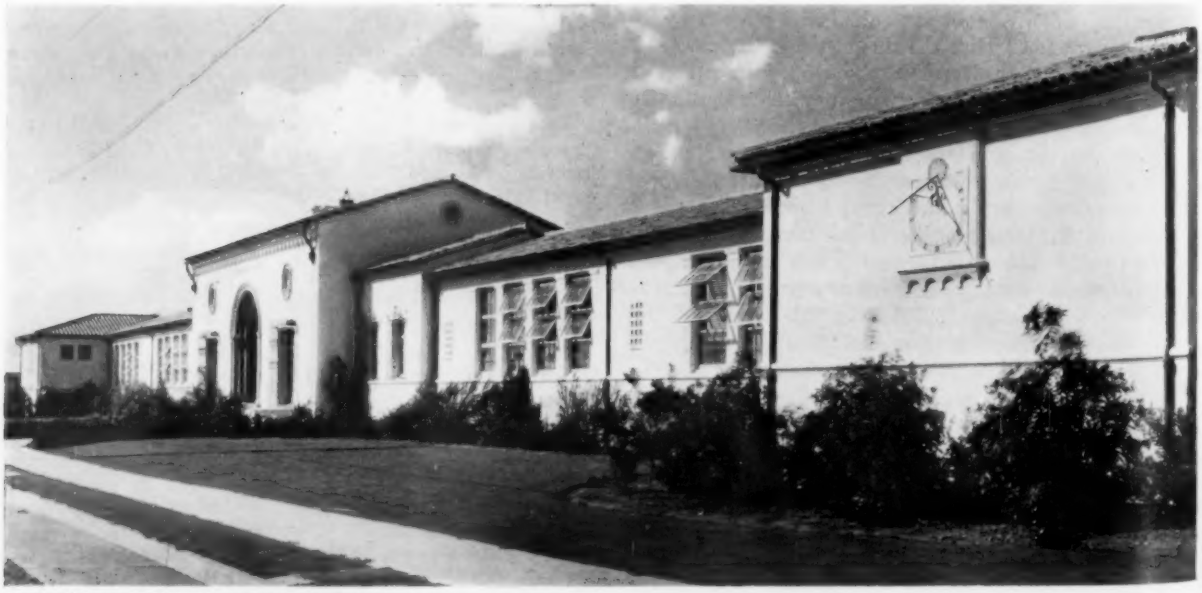
The earthquake of 1925 brought about a great opportunity for better building. The architectural board of review, created by ordinance, in its life of seven months laid such a foundation for taste, character and fitness in building, particularly in business structures, that before starting any building project today property owners consider well what is appropriate.

Santa Barbara owns its waterfront.* It operates a bathhouse. Nearby is the jetty forming a protected yacht harbor—$200,000 was spent upon it by the city, but more than double that amount was contributed by a citizen interested in yachting. (See the front cover of this issue.) A beautiful esplanade, back of the public beach, with fine planting, runs for 2½ miles along the waterfront. A handsome bathing pavilion and, at the end of the beach, a bird sanctuary, are among the private benefactions which adorn this recreation area.

The things that bring all sorts and conditions of people together contribute to a splendid community spirit—the great Christmas tree growing on the grounds of the Y. M. C. A.; the eighty summer concerts by the municipal band; the August festival of "Old Spanish Days," with its evening celebration at the Mission as in Colonial times, and the historical pageant, correct in all the details of the city's past; the spring and fall flower shows, the gardening classes and garden tours, attended yearly by thousands of people. There is great interest in small house architecture, and such improvement in design has been attained that Santa Barbara has won first prize in the Better Homes in America campaign for seven successive years.

A large percentage of the population of Santa Barbara is native-born white, with many alert, progressive citizens who give generously of their time, thought and money. The City Council realizes the value of consulting experts in solving municipal problems, and the securing of cooperation has become an art in this city by the sea.

* See THE AMERICAN CITY, February, 1931, page 122.



*Soule, Murphy and Hastings, Architects, Santa Barbara*

THE PEABODY ELEMENTARY SCHOOL IN SANTA BARBARA

# Why Save in Municipal Fire Prevention and Pay in Increased Fire Losses?

*By* PERCY BUGBEE
National Fire Protection Association

THE idea that it is just as much the function of a municipal fire department to prevent fires as it is to control them was very slow to develop throughout the United States and Canada, but within recent years this activity has gained rapid headway. Indeed, the growth of the fire prevention bureau as an arm of the fire department during the last decade has been little short of amazing. A recent survey of such work in the United States indicated that only 3 of the 41 cities over 200,000 population do not have a fire prevention bureau organization, and only 14 of the 93 cities over 100,000 population in the country are without such a bureau.

Because many of the fire prevention bureaus in fire departments are relatively recent in origin, there is a real danger that this work will be eliminated or drastically curtailed in the present wave of municipal economy. It is perhaps natural for cities to attempt to cut out the more recent service functions. Some new municipal services were added in the days of prosperity which may be got along without in times of adversity. It is the writer's firm conviction that municipal fire prevention work does not fall in this category and that, where a fire prevention organization is functioning with reasonable efficiency in a municipal fire department, the return to the city and to the taxpayers for the amount expended is very great.

In city budgets the cost of providing adequate fire protection looms very large. The cost of providing reasonably adequate fire prevention work in the fire department is, however, relatively small. New York City maintains a large Fire Prevention Bureau in its Fire Department. The payroll of the Bureau in 1931 amounted to $636,755. This compares with the Fire Department payroll for the fire-fighting forces of $23,103,000. Los Angeles maintains an excellent Fire Prevention Bureau. Its payroll in 1931 was $100,000 compared with the Fire Department payroll of $4,444,000. In Wilmington, Del., the Fire Prevention Bureau payroll for 1931 was $13,100 compared with the Fire Department of payroll of $336,200. In St. Paul the Fire Prevention Bureau payroll in 1931 was $17,400 compared with a Fire Department payroll of $878,800. Expressed in terms of percentages, the fire prevention bureau payroll in our cities runs from half of one per cent up to four per cent of the total payroll. It does not seem to us at all unreasonable to spend this percentage of the fire department appropriation for putting out fires before they start.

Let us examine in some detail what some of these fire prevention bureaus are accomplishing:

### Minneapolis

The Fire Prevention Bureau in Minneapolis was established in 1929. In its annual report for last year the Bureau points out that since it was established the loss in the city has steadily decreased, although population and hazards have increased. The Bureau has done excellent work on a very small appropriation, but in spite of this fact the Bureau has been drastically cut and is compelled to function with a limited force. During the year the Bureau inspected 15,409 buildings and secured the correction of 8,585 hazardous conditions. It investigated 124 suspicious and incendiary fires and secured 9 convictions. One hundred and forty old and dilapidated buildings were wrecked during the year as a result of its activity. Among its other activities, the Bureau made 10,910 inspection of theaters, inspected 2,206 oil-burner installations, and investigated 1,742 fires.

### Los Angeles

The Fire Department in Los Angeles maintains a Bureau of Fire Prevention, a Bureau of Public Relations and a Bureau of Fire Investigation. The cost of these bureaus represents a very small proportion of the Fire Department budget, but the annual record of accomplishments made by them is most impressive. The report for the year ending June 30, 1931, indicates that the Bureau of Fire Prevention supervised a total of 330,000 inspections, and 17,000 violations of city ordinances were corrected during the year. The Bureau of Public Relations addressed 77,000 persons during the year, in addition to over 100 radio addresses. It inspected all the public schools of the city and conducted fire drills therein. The Bureau of Fire Investigation investigated 1,462 fires during the year, and among its other activities secured 25 convictions for arson. There is no doubt that the excellent fire prevention work carried on by this city is largely responsible for its favorable fire experience.

### Detroit

The Bureau of Fire Prevention has been operating as part of the Fire Department in this city for a number of years with great success. In spite of the excellent work done by the Bureau at a small cost, a very drastic cut in its personnel was made last year. We quote from the annual report of the Bureau for 1932 as follows:

"As compared with the year 1931, more important than other facts and figures in the work of the Fire Department during the year 1932 is the knowledge that there was a decrease of 1,054 fires and a decrease of monetary loss to the amount of $824,120 over the previous year. Of added importance is the fact that during the year the Building Department issued 5,156 permits for new buildings of all kinds having a value of $9,041,755, all of which has been added responsibility for the Fire Department."

During the year the Bureau made 35,000 inspections and secured the remedying of 19,900 hazardous conditions. The arson squad which is part of the Bureau investigated 972 fires and secured 14 convictions for arson. It also brought about a decrease of 30 per cent arson losses over the year before, although the experince in most of the cities of the country has shown a substantial increase in arson fires.

### Cincinnati

Another city that has appreciated fully the importance of carrying on good fire prevention work as part of its Fire Department functions is Cincinnati. The Bureau of Fire Prevention in that city supervises inspections made by all the firemen. For the year 1932 a total of 183,000 inspections were made by the Department, and over 17,000 hazardous conditions were remedied during the year. The Bureau inspectors inspected over 20,000 buildings.

### Indianapolis

Here is another city that has carried on excellent Fire Prevention Bureau work for a number of years, with satisfactory dividends resulting therefrom. During 1932 some 74,000 inspections were made and over 9,000 defects were corrected. This Bureau conducts intensive inspections of theaters, film exchanges and public schools, and carries through a spring clean-up campaign and a Fire Prevention Week campaign in the fall. During the year the Bureau secured the removal of 183 dilapidated buildings and had 191 more repaired or boarded up. It investigated 552 suspicious fires and secured 21 convictions for arson.

The foregoing brief summaries of the work of some of the fire prevention bureaus will perhaps serve to indicate the amount of practical effort put in by these bureaus to reduce fire losses and hazards. The work of an intelligently organized bureau of fire prevention in any municipality is constructive service to the taxpayers of a high order. Its work tends to conserve life and substantially reduce loss of property from fire, indirectly thereby reducing the insurance rates of the city, and also the maintenance cost of the fire department by lessening the number of runs, the hazard to life of the firemen, and wear and tear on the apparatus.

The elimination or reduction of this sort of municipal activity may show a very small saving in the municipal budget, but there is no question that it will show a very large indirect loss to the city and to every taxpayer. Actually, in bad times the importance and the need for good fire prevention work in a city increase greatly. People become more careless, and therefore the number of fires increases. There is a considerable increase in incendiarism in bad times. It is therefore the antithesis of common sense to effect an apparent small saving by slashing this arm of the fire department when the need for its work as recognized and developed in good times has increased many-fold in bad times.

# How City Manager Cities Are Meeting Their Financial Obligations

THERE has been so much loose talk about shaky city credit and threatened municipal receivership that THE AMERICAN CITY is glad to present the other side of the picture, based on reports received during April from 21 municipalities of from 50,000 to 250,000 population. City managers in this group were asked to answer five questions:

1. Has your city failed to meet any of its salary or interest payments?
2. Are your other municipal obligations being met with reasonable promptness?
3. Is tax deliquency alarmingly high, and if so, how are you meeting the problem?
4. How does your 1933 budget compare as to total amount with that of 1932, and what are the comparative figures for unemployment relief?
5. Has your city sufficient borrowing capacity to finance needed public works, and what new projects are contemplated this year, with the aid of R. F. C. funds or otherwise?

In reply to question No. 1, every one of the 21 managers states that his city has not failed to meet any of its salary or interest payments.

Likewise, in reply to question No. 2, every city has met its other municipal obligations with reasonable promptness, with one exception where, in April, 1932, there was a deficit of over $200,000, which has since been reduced to approximately $122,000.

Ten city managers state that their tax delinquencies are not alarmingly high, but the others make less optimistic reports in reply to question No. 3. In the latter group the reported delinquencies range from less than 2½ per cent to 45 per cent. Methods of dealing with the delinquency problem include the issuance of warrants, the permitting of tax payments on an installment basis, the use of collections from past delinquencies as a revolving fund, the setting-up of a reserve out of surplus, etc.

Twenty of the 21 cities report reductions in their 1933 budgets. In a number of cases the comparable figures are not given, but the percentages of reduction as reported range from a minimum of 5 per cent to a maximum of 30 per cent. Most of the reductions appear to range from 5 per cent to 10 per cent. The only city reporting a higher budget for 1933 than for 1932 attributes the increase to its welfare burden.

In reply to question No. 5, 13 of the 21 cities state that their borrowing capacity is ample to finance needed public works. Some interesting answers to this question follow:

From C. A. Harrell, City Manager, Binghamton, N. Y.: "The city has a marginal borrowing power of something over $4,000,000."

From C. E. Douglas, City Manager, Glendale, Calif.: "We have sufficient funds to finance any work of our utilities. We have sufficient borrowing capacity to finance any needed public works, but this would require a bond issue which no doubt would fail to meet with the public's approval at this time. However, we are not in need of any large public works at this time."

From E. C. Rutz, City Manager, Kalamazoo, Mich.: "The borrowing capacity of the city is very satisfactory, since the only outstanding bonds are a recent 'calamity' issue of $295,000. Considerable public works improvements were carried on in 1930 and 1931 and also in 1932, with the result that the projects for 1933 are very limited and total only about $50,000, which will be financed 50 per cent by the city and 50 per cent through R. F. C. funds because the same are on state trunk line highways."

From William E. O'Brien, City Manager, Kenosha, Wis.: "We are not up to our bonded limit, having a margin of about $400,000 to work on. As you know, in Kenosha we carried on an extensive improvement program during the last ten years along the line of city planning, which has been paid for out of current funds. We have some projects, such as sewage reduction plant, extension of storm-water sewers and water mains, that could be built at this time if we could secure a loan from the R. F. C."

From James S. Dean, City Manager, Sacramento, Calif.: "The city's unimpaired bonding capacity is $7,859,260."

From C. B. Goodwin, City Manager, San Jose, Calif.: "The city of San Jose has used only 15 per cent of its bonding capacity."

The other city managers on whose letters to THE AMERICAN CITY the foregoing article is based, are:

Adam R. Johnson, Austin, Texas; Hovis D. Palmore, Covington, Ky.; P. H. Millard, Beaumont, Texas; Robert L. Cooper, Port Arthur, Texas; George D. Fairtrace, Fort Worth, Texas; Bert C. Wells, Wichita, Kans.; Albert V. Goeddel, San Diego, Calif.; I. Walke Truxton, Norfolk, Va.; J. W. Charleville, Pasadena, Calif.; James E. Barlow, Portland, Maine; Neil Bass, Knoxville, Tenn.; R. W. Flack, Durham, N. C.; William B. Schmuhl, Pontiac, Mich.; R. W. Rigsby, Asheville, N. C.; William D. Robbins, Niagara Falls, N. Y.

# FORWARD STEPS

**Reported by**
**Municipal Officials, Chamber of Commerce Executives, and Others**

## *Buffalo Develops Its Waterfront*

BUFFALO, N. Y.—Buffalo's centennial, observed last summer, has given to the city a permanent memorial in the form of Centennial Park, created out of 27 acres of filled-in land along the waterfront. It has also hastened the development of 69 city-owned acres which have not yet been filled in. The City Council has let the contract for the completion of the rest of the bulkheads to enclose the entire waterfront lands, and a study is now being made by the Park Department as to swimming facilities and other recreational features that will be made possible by the filling-in of these lands.

Over twenty years ago the citizens of Buffalo, through their City Council, had the vision and wisdom to purchase from the state of New York riparian rights to about 96 acres of land lying under the water along the shores of Lake Erie and the Niagara River. Over $1,000,000 was paid for these lands, and the filling-in process has been a slow one. Buffalo has ten miles of waterfront but, like the typical American city, it gave away nearly all this valuable property. Only two parks were located on lands overlooking the lake and river, and both these parks were hemmed in at the water's edge by railroads and the Erie Canal, so that no swimming or wading facilities were possible.

Study of plans for the celebration of the one-hundredth anniversary of the incorporation of Buffalo as a city was the means by which the hopes of the early planners for a waterfront park were brought to sudden realization. The Buffalo City Planning Association presented to the Centennial Committee essential facts as to the area, such as the physical possibilities and available funds for the development of 27 acres, which was then practically all filled in but unavailable for use because of non-completion. The Centennial Committee decided to develop the area as its permanent memorial to the Centennial, and the City Council very appropriately named it Centennial Park.

As soon as the decision was made, every resource of the Park Department, as well as the volunteer service of private architects, was mobilized to convert the filled-in land into an attractive park in a little more than one year's time. A very mild winter in 1931 greatly aided the landscape engineer in grading and seeding and in the transplanting of good-sized trees. The pumping station and filtration plant, located at the north end of the park, were well planted with trees and shrubs; artistic seats were placed along the immediate front to command a view over the water; and the appearance of a real park was achieved almost over night. For the comfort of the thousands of visitors at the Centennial, a temporary stadium was erected which has now been turned over to the city, and a fine running track makes an ideal setting for all kinds of outdoor sports and exhibitions.

The dedication of the new $7,000,000 City Hall during Centennial Week focused the eyes of citizens on the next important step, which is the tearing-down of the old abandoned coal trestles which lie in the path of the broad mall sometime to be built to connect the City Hall with the waterfront park. When the mall is completed, it will take only five minutes to drive from the City Hall out to the park. From there a view of the Niagara River is possible all the way to the city limits.

MRS. MELVIN P. PORTER,
Secretary, Buffalo City Planning Association, Inc.

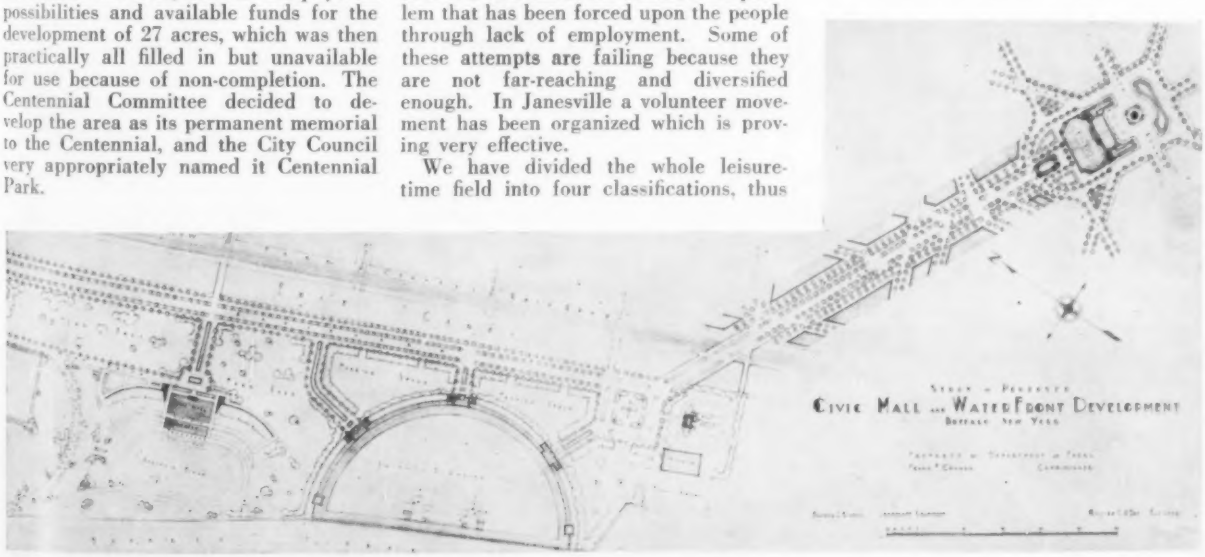
## *Janesville Makes Good Use of Leisure Time*

JANESVILLE, WIS.—Frantic attempts are being made in many communities to find a solution to the leisure-time problem that has been forced upon the people through lack of employment. Some of these attempts are failing because they are not far-reaching and diversified enough. In Janesville a volunteer movement has been organized which is proving very effective.

We have divided the whole leisure-time field into four classifications, thus exploding a popular theory that recreation consists entirely in getting out and playing some sort of athletic game. Classification I is Drama and Music. Under this heading there are regularly scheduled meetings and classes for pageantry, plays, concerts, chorus work, orchestras, bands, readings, debates, etc. There is a class in make-up for use in plays; reading classes; a 300-voice chorus, meeting two hours a week; original-play tournaments; ten dance orchestras organized with the aid of the local Musicians Union. There are fifteen specialty acts rehearsing. Several Sunday afternoon special-interest groups meet regularly for discussions. Special stunts are staged from time to time.

Classification II lists Athletics and Games. Here are included all activities in baseball, kitten-ball, golf, tennis, swimming, basketball, volley-ball, shuffle-board, mixer games, social games, tap dancing, exercise games, and gym classes. There is a neighborhood kitten-ball league of 36 teams for men and 12 for women. Seventy-five tennis players are working out under instruction two hours a week, and 200 golfers are on a similar schedule. There is a baseball league of six teams, and leagues for shuffle-board, basketball and volley-ball are being set up. Swimming classes meet regularly. From this second group are taken leaders to direct games at the school "mixers" that are staged.

Classification III includes all Handicraft—dressmaking, painting, sketching, photography, stamp collecting, gardening, rug making, woodworking, leather working, radio repairing, metal working, etc. Nineteen classes meet from two to five hours a week from these groups, all filled beyond reasonable capacity. There



WESLEY LAKE, ASBURY PARK, N. J., AT LOW WATER

are some exceptionally skilled people in these classes who have made excellent teachers.

Our garden project has been tied with the project run by the Chamber of Commerce, which gives worthy people plots of land to work during the summer and furnishes them with seed. Well-qualified supervisors of these groups have held discussions with the gardeners to discover the best means of getting maximum results.

Classification IV is that of Social Activities — dancing, cards, smokers, afternoon and evening meetings with speakers, progressive game parties, illustrated lectures, picnics, etc. Every two weeks the adults of each school district meet in their own schoolhouse for community singing—a very popular activity, with words flashed on a screen and a good leader in charge, cards, games, and dancing. Every party is attended to capacity. Some of the people have not been out socially for two or three years, but the crowd mixes well into a large unit.

This volunteer organization now has some 120 active workers. Over them a director and an assistant have the job of correlating all the activities and seeing that the volunteer workers do not fall down on their tasks. An Executive Committee acts in an advisory capacity. The Parent-Teacher groups and the schools are the central units around which the organization has been built. Every activity sponsored is free. No receipts are contemplated, and no expense is foreseen. In most cases participants furnish their own materials. The entire stress of the organization is on *participation*. Absolutely no distinction is made between employed and unemployed. Response and cooperation have been almost perfect.

PAT DAWSON.

## *Steel Sheet Piling Bulkhead Makes Pleasing Shore Line*

ASBURY PARK, N. J.—In connection with improvements made on Wesley Lake, which lies between Asbury Park and Ocean Grove, N. J., a somewhat unusual application of steel sheet piling was made in the construction of a bulkhead around the shores of the lake. Steel sheet piling, made of copper-bearing steel, was chosen for the bulkhead because of its lasting qualities and low cost of installation, and because of the desirable appearance which it presents.

The type of piling used was the AP16 Bethlehem (Lackawanna) sold by the Kalman Steel Corp., of Bethlehem, Pa.

The bulkhead extends along the Asbury Park side of the lake for a distance of 2,580 feet, and along the Ocean Grove side for 1,790 feet. The coping on the bulkhead is formed of 6-inch channels bolted to the piling. Along the Asbury Park side of the lake, where the wall follows a curved line, the coping was bent on the job to the required curvature by the use of special jacks.

The improvements on the lake included the construction of two reinforced concrete footbridges between the two municipalities. The sheet piles varied in length from 8 feet 6 inches to 16 feet, in order to have the bulkhead grade gradually to the level of the bridge walls and at the same time have equal penetration for all of the piling. The effect of the bulkhead when the water is at normal height is to give a very regular and pleasing shore line.

GEO. W. PITTENGER,
Commissioner of Streets and Public Improvement.

## *Community and Regional Planning in the Schools*

NEW YORK CITY.—Sixty out of sixty high schools approached in four counties, namely, Westchester and Rockland, N. Y., and Bergen and Essex, N. J., are including community and regional planning as a part of their regular course of study. A stereopticon talk on the subject will also be given to the assembly in each of these schools. A special map-circular of the New York-New Jersey-Connecticut Region in four colors, showing the principal proposals for highways, railroads, parks and parkways, industrial areas and airports, has been prepared for this purpose, with a brief explanation of the proposals on the reverse side. Here also is some elementary information about planning—such as the need for planning, a planning board, a master plan and zoning, and the origin and scope of the Regional Plan of New York and Environs.

One suggestion is made for the use of the maps. The pupil is asked to locate one of sixteen different business enterprises in each of the sixteen counties in the Region, and to state his reasons for so locating them on the basis of the Regional Plan proposals. This map-circular supplements the county planning pamphlets that have previously been published by the Regional Plan Association for each of these four counties.

The entire project is an attempt to make available to pupils of the schools, and to citizens generally, in simple readable form, the vast amount of valuable information that has been gathered by the Regional Plan Association at great expense. In some cases the Superintendent of Schools is using the occasion to create greater planning interest and support in the community by arranging for a public meeting on the subject. In other communities, existing planning boards or citizen planning councils or service clubs have paid for the planning material to be used in the schools.

A noteworthy phase of the work has been the eagerness with which school men have welcomed this material. They consider it a means for bringing about a better understanding of the community's importance to the individual, and of the necessity for budgeting public improvement funds in accordance with a long-term, predetermined plan for the entire community.

PHILLIP SHATTS,
Field Secretary, Regional Plan Association.

NOTE: Some of this material is available for free distribution to those who are interested. The map-circular is distributed to the schools in quantities at 5c; single copies elsewhere at 25c.

## *City-County Consolidation for Economy and Efficency*

DURHAM, N. C.—The Legislature of North Carolina has just passed an act permitting the consolidation of Durham and Durham County, which, it is estimated, will save approximately $200,000 in administrative costs alone. The need of this simplification was recognized by the Durham Chamber of Commerce more than two years ago, when Frank L.

Fuller, Jr., then President of the organization, appointed a committee to conduct a research and make recommendations.

Needless duplication of governmental machinery, resulting conflicts of authority, division of responsibility resulting in inefficiency, unnecessary expense, and the engendering of local animosities detrimental to civic growth, were contributing causes of the movement for a more simplified government of county and city. Various plans now in operation throughout the country tending to eliminate the evils of too much government were studied and the results ascertained. With this information in hand, the committee went at the task to outline a plan that would particularly suit Durham and Durham County. It was borne in mind that the city represented 83 per cent of all the taxable wealth of the county, and that the population of the city was 77 per cent of the county's population.

There were a city manager and a county manager handling practically the same business. A city council of thirteen men ruled the city of 52,037 people. The five county commissioners headed a government representing 67,196 citizens, of which number only 15,159 lived outside the city. This showed duplication in expense and in effort at the cost of efficiency. There were also two auditors' offices, two tax collectors, two treasurers, two attorneys, and so on. The city was maintaining a police department whose officers could not perform their duties beyond the city limits. On the other hand, the county supported a sheriff's office, with the usual staff of deputies, to keep the peace of the county. That part of the county outside the city was bearing 17 per cent of the cost of operating the county. That part of the county within the city limits was paying the entire cost of city government and 83 per cent of the county government.

Three plans for eliminating duplicated governments were considered. The limits of the city and county could be made coterminous, wherein the city's machinery of government could serve the entire county. This plan was discarded because it was not deemed fair or possible to tax the rural sections for advantages enjoyed by the city but not needed or wanted by the ruralist.

A second possibility was that of severing the city from the county. Such a move would probably have been advantageous to the city but would have left the county without adequate support. Therefore, the idea was speedily dropped.

The third plan, which the committee adopted for recommendation, was a functional consolidation whereby one set of officials is made to serve for both the county and the city. Provision is made to secure to the city its private property and its separate affairs such as water works and fire department. It is difficult to estimate the savings to be attained through such a consolidation, but, based on the best figures obtainable, it appears that a saving in taxes of from $100,000 to $200,000 is entirely possible, to say nothing of increased efficiency in running the affairs of the county and city.

Under the plan the police department would act throughout the county, while the sheriff's office would be reduced to the duty of process serving. The two governing bodies would be reduced from eighteen members to a consolidated commission of seven members. Five of these would be elected from within the city, and two from the county outside the city. On matters pertaining strictly to city affairs only the five elected from within the city would vote, and in all matters pertaining to the county the seven would have a voice because the five chosen from within the city are also representative of the county.

The report was adopted, after careful study and public hearings, by the Chamber Directors. Then a bill was presented to the State Legislature and passed. At such time as the board of elections is presented with a petition containing signers equal to 20 per cent of the votes cast in the last gubernatorial election, it is mandatory upon the board to call a special election. If a majority of the voters cast ballots favoring the plan, it automatically becomes effective.

It has been the policy of the Chamber not to rush the matter, but instead to give the people ample time to study the plan, realizing that only through education will the election carry in favor. On the Chamber's committee were Justin Miller, Dean of Duke University Law School, Professor Malcolm McDermott, of the same school, N. T. Van Hecke, Dean of the University of North Carolina Law School, members of the legal profession from the city, and business and banking interests. It was a committee that worked, and when its job was finished had submitted something worth while for all who are interested in bringing about real economy and efficiency in local government.

FRANK A. PIERSON,
Secretary, Durham Chamber of Commerce.

EDITORIAL NOTE.—Copies of the report will be mailed by the Chamber to those who send 3 cents postage.

## *Unemployment Relief Funds Build Grandstand*

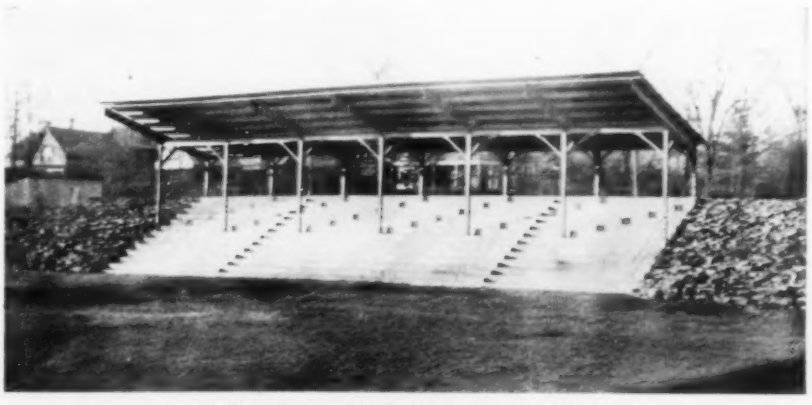
TITUSVILLE, PA.—This city spends its relief funds for lasting public assets. Citizens able to contribute do so willingly, since they get something for their money. The morale of the city's unemployed is maintained on a high plane by doing useful work.

During the past year the School Board of Titusville and the Emergency Unemployment Committee demonstrated the effectiveness of cooperation in securing the construction of a long-needed grandstand at the Carter Athletic Field of the High School. It was agreed that the Board should let contracts to cover the furnishing of material, equipment and supervision, while the Emergency Unemployment Committee supplied and paid for all labor. Practically every kind of building mechanic, as well as common laborers, was included in the list of registered unemployed, so no trouble was experienced in supplying all the workmen required. The rate of wages paid was 33 1/3 cents per hour, and about 100 men were given employment for three days a week for six weeks. The total labor payroll for the job was $4,058.28. The School Board's share of the cost of the improvement was $6,571.22, which included the contractor's profit and a florist's contract for furnishing plants and shrubs.

The grandstand is constructed of reinforced concrete and steel. Provision was made in the design for the future construction of dressing rooms, showers and lockers beneath the stands. This was done by locating the footings for the concrete piers below the future floor level so that excavation for future work will not disturb the present construction in any way. At present the stand appears to be supported by an earth embankment, part of a crescent-shaped terrace formed when a cut 12 feet wide and 18 feet high was made to enlarge the field. The embankment at each side of the grandstand is riprapped with large stones, and where not used for overflow seats, it is landscaped as a rock garden.

The high quality of the work done by C. J. Ward, local contractor, was shown by an inspection of the grandstand after one season of use. The concrete was in perfect condition though much of the work was done during freezing weather. Careful protection of the concrete after placing, and proper attention to the fundamental principles of making good concrete, were combined to insure the durability of the structure.

A. G. BELLEN,
Mayor.



HIGH SCHOOL GRANDSTAND, TITUSVILLE, PA.

# Baltimore Police Department Aided by Up-to-Date Radio System

SOME months ago a series of robberies occurring in a certain section of Baltimore led to the arrest of a man who admitted the offense and said he lived in Washington, D. C. Under examination the culprit was asked why he went to the trouble of making regular trips from Washington to Baltimore instead of confining his efforts to prospects nearer home. Without hesitation he answered: "Well, sir, they got that radio business in Washington and I don't want no messin' with that stuff."

From now on, light-fingered gentlemen will have to work elsewhere, for the city of Baltimore also has police radio protection. The system, which was officially opened March 1, 1933, has been advocated for more than three years by General Charles D. Gaither, Commissioner of Police in Baltimore.

Under General Gaither's direction numerous tests were made by Sergeant William E. Taylor to determine the location of the transmitter and the coverage to be obtained. Baltimore, having a population of 813,000, is entitled to use the maximum radio power permitted by the Federal Radio Commission, i.e., 500 watts. The city covers 91 square miles and has a large business area containing many high steel-frame buildings. From experimental data the Northern District police station was selected for the site of the transmitter. From this point the greatest distance to the city line is 7 miles, and any radio "shadow" cast by the steel buildings to the south will fall in the bay, where coverage is not particularly required.

Last December the contract for the entire system was awarded by General Gaither to the RCA Victor Co., through its Baltimore distributors, Ollendorf and Hirsch, Inc. Immediately a radio school was organized under Sergeant Taylor, and selected members of the Police Department received intensive instruction which enabled them to secure Government licenses to operate the radio transmitter.

The system as installed consists of the 500-watt transmitter controlled from police headquarters some miles distant; a conventional "T" antenna connected to the transmitter by a transmission line; and 20 receivers installed in cruising police cars. The control room at police headquarters is the nerve center of the system, for to this room come the telephone calls from citizens requiring police assistance, and from this room go the orders to the cruising cars regarding needed assistance. The dispatcher is provided with a microphone and a voice amplifier connected by telephone lines to the radio transmitter. In front of him is a special signal board which shows at all times the number of cars on duty, their approximate location and whether they are available to execute orders. A dispatcher is on duty at all times. In case of failure of the telephone line which connects the dispatcher's microphone with the transmitter, alarms can be broadcast directly from the transmitter location.

The voice currents at the far end of the dispatcher's wire are passed through a voice amplifier and are fed directly into the radio transmitter, which consists of two units, the 100-watt exciter and a 500-watt radio amplifier. The exciter is the standard RCA Victor 100-watt police transmitter as provided for smaller cities. The 500-watt amplifier employs the "Class B" system for securing the audio power required for 100 per cent modulation of the 500-watt carrier. The largest tubes used in the transmitter are UV-230-As, which are relatively inexpensive. All direct-current high voltages are supplied by mercury-vapor rectifier tubes, so that no rotating machinery is required.

The output of the transmitter is fed to the antenna by a two-wire transmission line. The antenna span is supported on one end by the building and on the other end by an 85-foot spliced wooden mast adequately guyed. In the center of the span the vertical downlead is connected to the transmission line. This construction permits the active part of the antenna to be kept well away from buildings and also provides a good ground connection.

The automobile receivers are the standard RCA Victor Superheterodyne, operating with dynamotors for plate supply. Twenty cars have been equipped, but additional receivers are on hand for spares and for additional cars.

A systematic program of education of the public is being conducted to familiarize citizens with the radio service. It is interesting to note that on the first night that test alarms were transmitted, a hold-up was reported and the details were broadcast. Sergeant Taylor was in a cruising car at the time and arrived at the scene of the crime in less than a minute after it was reported. Unfortunately, the citizen had waited ten minutes before telephoning the police of his hold-up, and this delay had permitted the criminal to make a getaway. With close cooperation between citizens and the police, second-story men and stick-ups will find Baltimore a very unprofitable place in which to operate.

## A Fire Pumper Afloat

THE FLOATING FIRE COMPANY OF PARKERSBURG, W. VA.

When the low-lying part of Parkersburg was flooded by the Little Kanawha River this spring, the Fire Department, headed by Chief Lloyd Layman, placed a 750-gallon American LaFrance pumper on a steel barge, thus for the first time giving the inundated section adequate fire protection. A gasoline boat was attached to one end of the barge, and a houseboat, as the fire crew's quarters, at the other

## *Recent City Manager Appointments*

Egnar Anderson, formerly General Manager at Mount Pleasant, and for the last two-and-a-half years a maintenance engineer for the State Highway Department, succeeding, at Kingsford, Mich., C. Walter Seiler, appointed 1925.

R. G. Bowdry, Stamford, Texas, succeeding Charles W. Zug, Jr., appointed 1923.

John M. Brawley, Haines City, Fla., succeeding R. E. Keagle, who had served since 1928.

S. MacN. Johnston, appointed April 3, to succeed William F. Clark, Phoenix, Ariz.

O. M. Lanham, Rome, Ga., succeeding S. S. King, who had served since 1919.

H. P. Powell, Griffin, Ga., succeeding J. P. Persons, who had served since 1930.

G. M. Sullivan, succeeding J. V. Grant, Cornelia, Ga.

CLARENCE E. RIDLEY,
Executive Director, The International City Managers' Association.

Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

# ZONING and PLANNING NOTES

From Data collected by the Zoning Committee of New York (233 Broadway)

## Zoning Ordinance as Defense to Suit for Nuisance

CALIFORNIA.—*Eaton v. Klimm*, 18 Pac. 2d, 678 (Supreme Court, January 31, 1933).—That the zoning ordinance permitted the continued operation of an asphalt mixing plant does not preclude its abatement as a public nuisance.

EDITOR'S NOTE.—See note to Iowa case below.

## Parks—Navigable Waters

CALIFORNIA.—*Los Angeles Athletic Club v. City of Long Beach*, 17 Pac. 2d, 1061 (District Court of Appeals, Dec. 28, 1932).—Under a state statute, the city of Long Beach holds title to certain lands under water to be used for park purposes and for the construction of docks and other aids to navigation. Upon a part of this land it is constructing a breakwater and a fill upon which it proposes to erect a public auditorium. This construction, the plaintiff contends, is so interfering with the tides as to erode and carry away parts of its beach and endanger its club-house. It claims that the auditorium is not a proper park use. *Held* that the use of park lands for this purpose is proper.

EDITOR'S NOTE: The paramount use of land under water is as an aid to navigation. Evidently, all such land need not and cannot be so utilized, and the state has the right to permit the employment of these lands for other purposes when not needed for its primary purpose. The granting of these lands partly for commerce, partly for parks, was a declaration by the state that part of it was not needed for commerce, and might be used for parks. The case further states that on this park land a city auditorium might be erected, because such use of it was its employment for a park purpose. It must therefore be assumed that the auditorium was to be employed for public concerts or other public recreation, as otherwise it could not lawfully be constructed in a park.

## Zoning—Undertaking Establishment—Commercial District

IOWA.—*Kirk v. Mabis*, 246 N. W. 759 (Supreme Court, February 14, 1933).—This is a suit by the owner of, and resident in, a dwelling house to restrain the conduct of an undertaking establishment in a commercial district in the city of Des Moines. There was no evidence that the establishment was not properly run. The zoning ordinance did not exclude such an establishment from a commercial district. The plaintiff sought to enjoin the establishment on account of its depressing effect upon him and his family. *Held* that there was no ground for such an injunction.

EDITOR'S NOTE.—An undertaking establishment is, as a rule, forbidden in a residential district, and allowed in a business district; see my note to the Maryland case of *Jack Lewis, Inc., v. Mayor, etc., of Baltimore*, in the March issue of this magazine. The fact that the zoning ordinance permitted the undertaking establishment in the district, rightly influenced the Court in the case in refusing the plaintiff relief against it; but the fact is not necessarily a defense; see the Massachusetts case of *Beane v. H. K. Porter, Inc.*, in my January, 1933, "Notes."

## Zoning Commission—Unanimous Vote

KENTUCKY.—*Gamm v. City of Lexington*, 56 S. W. 2d, 703 (Court of Appeals, January 27, 1933).—The State Statutes, 1930, sec. 3235 f. — 8, requiring for a change in the zoning ordinance the "unanimous vote" of the Commission, does not require the vote of all the members of the Commission, but only such vote of the members present, if constituting a quorum. If the vote of all the members is necessary, it must be so stated in the law.

## Implied Easement of Light and Air

NEW JERSEY.—*Engel v. Siderides*, 164 Atl. 397 (Court of Errors and Appeals, February 8, 1933).—This is a bill to restrain the defendants from continuing to maintain a wall erected on their land, adjoining the land of complainants. This wall is very near the windows of complainants' buildings, and obstructs the entrance of light and air into them. Both pieces of land were formerly the property of the same owner. Fifty years ago the house in question was erected, with windows very near, and facing the adjacent vacant lot. The owner sold the house and lot to one person, and the vacant lot to another. The present owner has now erected the wall in question. The complainants assert that they have an easement of light and air with which this wall illegally interferes.

The doctrine respecting the implied easement of light and air has not been adopted generally, in other states, but is a part of the law of New Jersey. The use which gives rise to this easement must be so long continued and so obvious and manifest as to show that it was meant to be permanent; and it must be necessary to the beneficial enjoyment of the land in question. The use in this case did not satisfy these tests, and the bill to prevent the continuance of the wall is not granted.

## Private Covenants—Garage

NEW JERSEY.—*Murtha v. McGarry*, 164 Atl. 689 (Court of Chancery, March 2, 1933).—A covenant against the erection of any building other than a private residence or dwelling house "except that necessary and suitable private garages and outbuildings may be erected on the rear of the lot," while susceptible of interpretation as intended to prohibit the construction of a private garage as an integral part of a dwelling house, is equally susceptible of interpretation as not intending such prohibition. In such case, such construction will not be prevented by injunction, but the owner will be allowed to build a garage as a part of his house, for equity will not enforce a doubtful right.

## Private Covenants—Appurtenances

NEW YORK.—*Duesberg v. Haight*, 146 Misc. 218 (Supreme Court, December 9, 1932).—Under deeds of lots forming part of a residential development containing a covenant that "no stable, garage or other building shall be constructed thereon, except as a appurtenance to the dwelling thereon constructed," so-called over-night cabins are not an appurtenance within the meaning of the convenant. In explanation of its decision to this effect the Court says:

"What might be an appurtenance in one case would not be in another. Appurtenance depends upon the intent and nature of the conveyance. From a reading of all the papers it seems clear that the intent of the original owners was to develop a residential section of these lots in question. The garage as constructed on lot No. 3 owned by the plaintiffs agrees in its nature and quality with the dwelling. There exists a propriety of relation between the dwelling and it, and, therefore, it is necessarily an appurtenance which actually exists for the full enjoyment of the property. This cannot be said of the over-night cabins. They evidently were constructed for financial gain regardless of the propriety existing between them and the dwelling owned by the defendants. It is difficult to see how under any construction they could be called an appurtenance when considering the intent of the original grantors."

## Streets

NEW YORK.—*Morelight Service Stations, Inc., v. Goldman, Commissioner of of Plant and Structures, New York City*, 261 N. Y. 32 (Court of Appeals, January 17, 1933).—The city of New York had taken certain land, sometimes called "New Street," for a bridge approach. Upon this land abutted two small pieces of land, now united in ownership. Upon this land the owner erected tanks for the storage of gasoline and started to service automobiles with gasoline by means of portable tanks wheeled from these premises to the curb of the roadway. Then Goldman, as Commissioner of Plant and Structures of New York City, caused a fence to be erected across the front of these premises which prevents entrance and exit. *Held* by the Court that plaintiffs are entitled to the removal of the fence, but may not against the Commissioner's judgment, obstruct the sidewalk and cause congestion of traffic at the curb.

"New Street," so-called, while it has certain street qualities, is not a street, but a bridge approach. It is public in character, and all who travel to and from the bridge possess a right of passage over it. But, although it physically resembles a street, the legal status is radically different. Many elements, among them the purpose of its acquisition, the nature of the municipal title, the residue of interest in the land lingering in the title of the abutting owner, all mark a difference in its legal condition. This land was not acquired for street purposes, nor was it laid out as such; it

is bridge property. Such easements of light, air and access as usually inhere in the title of abutting owners on a street do not attach to the plaintiffs in this case.

During the time that "New Street" has existed as a bridge highway, all abutting owners have been allowed to pass from and to their premises for such lawful purposes as, in the reasonable discretion of the Comissioner, do not intrude upon the uses of this land as a traffic lane to the bridge. Although there is not the right of access as in the case of an ordinary street, nevertheless to deny all ingress and egress to and from a particular parcel and to allow such privileges to all others conflicts with that reasonable and impartial management and control which a public official is bound by law to administer. The erection of the fence across the piece of property is therefore in excess of the Commissioner's powers. But the Commissioner may remove plaintiffs' portable tanks and their connections from the sidewalk and roadway if in the reasonable judgment of the Commissioner they obstruct the sidewalk and cause congestion of traffic at the curb.

EDITOR'S NOTE.—This case is an excellent illustration of the fact that the public authorities, in condemning land for public purposes, have a wide latitude in their choice of the rights that they will take and the rights that they will leave in the owner of the land in which they are acquiring interests, and the owner of abutting land. The rights taken and the rights left depend upon the purpose for which the land is acquired. There is no reason why these rights should be those so acquired, or left, in past practice. Usually the abutter retains the right of access to a street at any part of it on which he abuts. It has been suggested that highways to which the abutter is deprived, altogether or to a considerable extent, of access, might be laid out as express highways. Edward M. Bassett, who first made this suggestion, has given the name of "freeway" to such a highway. A highway of this sort would carry a much larger volume of through traffic than an ordinary street*; for it is the entrance and exit of numerous vehicles from abutting land that slows down movements and lessens the number of cars that can be accommodated.

* The term "street" is susceptible of many meanings; see the article, "What Is a Street?" by Edward M. Bassett, in the January, 1933, number of *City Planning*.

## Garage—Residential Neighborhood

OKLAHOMA.—*Cities Service Oil Co. v. Roberts*, 62 Fed. 2d, 579 (U. S. Circuit Court of Appeals, January 5, 1933).—A state has the right to regulate, within constitutional limits, the use of land within it, and therefore may declare what use is a nuisance. The Oklahoma statutes define a nuisance as unlawfully doing an act, or omitting to perform a duty, which "annoys, injures or endangers the comfort, repose, health or safety of others . . . ."

The owner of an adjacent home obtained, in the lower court, an injunction against the oil company for the use of a corner lot for a large filling station in a town of 5,000 population. The proposed station was in a residential neighborhood, but the town had passed no zoning ordinance. *Held* that such a station, so located, is a nuisance.

EDITOR'S NOTE.—Evidently, the statement of the principles underlying most of the decided cases in point.

## Zoning Ordinance—Incumbrance

WISCONSIN. — *Kend v. Crestwood Realty Co.*, 246 N. W. 311 (Supreme Court, January 10, 1933).—The defendant agreed to sell certain land to the plaintiff, representing that it was restricted to use for business purposes. At the time of this agreement the land was zoned for this use. Subsequently the county rezoned the property, placing it in a residential district in which business is forbidden. The plaintiff claims that there is now an incumbrance on the property and that, as the defendants agreed to give the plaintiff title to the land without this incumbrance, the contract of sale cannot be carried out and should be rescinded. *Held* that the subsequent zoning ordinance is not an incumbrance, and the contract of sale should not be rescinded.

EDITOR'; NOTE.—Evidently, the statement of the defendants that at the time of the contract to sell the land to the plaintiff it could lawfully be used for business, was true. They did not state, as an inducement to the plaintiff to purchase, that it would always remain available for such use, and are not responsible for the subsequent rezoning of the property making such use impossible. The defendants also agreed, as sellers of the property, that the property would be conveyed, at the time the plaintiff was ready to pay for it, "free from incumbrance." This brings up the legal question, whether a zoning ordinance is what is technically called an incumbrance. The Court decides that it is not, following not only previous decisions in that state, but also *Lincoln Trust Co. v. Williams Building Corporation*, 229 N. Y. 313, one of the early important cases sustaining zoning, decided in 1920. The Constitutions of the United States and of the various states provide, in so many words, or in effect, that property shall not be taken from its owner without compensation. Evidently, zoning ordinances limit the previous freedom of the owner in dealing with his property, and sometimes lower its market value. The courts of this country have held, however, that regulations, reasonable under the circumstances, and for the public health, safety or general welfare, are not a taking of property within the meaning of these Constitutions. Any other decision would have made many of the statutes and regulations which we all recognize as wise and just, impossible. Such regulations are often called police regulations. This case, and the cases it follows, therefore, decide that zoning ordinances are public regulations, for which the public authorities are not obliged to compensate the owner of the property zoned. They thus make zoning in this country possible; for zoning with compensation, although tried in one or two localities in this country, has proved to be unworkable.

The plaintiff asked for a revision of the contract, citing the early New York case of *Andersen v. Steinway and Sons*, 178 App. Div. 608, in which it was decided, under somewhat similar facts, that the Court would not decree the specific performance of the contract, because the contemplated use of the property was impossible. This decision, however, leaves the contract intact, and merely refuses to use the discretionary power of the Court to force its being carried out. Suit, therefore, could be brought on it for damages. The Andersen case, therefore, far from being an authority for rescinding the present contract, is an authority for recognizing it as valid.

## The Twenty Per Cent Clause in Zoning Ordinances

Very generally in zoning enabling acts in the various states there is a provision requiring more than a majority vote of the municipal legislative body to make a change in the zoning map, if there is a 20 per cent protest of property owners against such a change. In the New York City charter and in the New York (State) General Cities Law it is the owners of 20 per cent (1) of the frontage sought to be changed, (2) of the frontage opposite, (3) of the frontage in the rear, who have the right of protest. The expression "frontage in the rear" is ambiguous, and has given rise to much litigation.* In the New York (State) Village, and Town, Laws and in the enabling acts of other states the expression "area" is used in this connection. An amendment to the same effect is now before the municipal assembly of New York City. An article on this subject, prepared by Edward M. Bassett, has appeared recently in the New York City daily papers.

## Massachusetss Zoning Decisions

The Massachusetts Federation of Planning Boards in its Bulletin No. 29, dated February, 1933, gives a summary of zoning decisions of the Supreme Court of Massachusetts, prepared by Edward T. Hartman. This is the second bulletin of such decisions that the Federation has published.

* See the recent case of *Matter of Schmidt v. McKee, Mayor of City of New York*, Supreme Court, Appellate Division, February, 1933.

# The Municipal Bond Market

THE following is a representative list of recent sales of new issues of local bonds, taken from current numbers of *The Bond Buyer*. With the easing of the bank moratorium more sales were made than in the preceding four-week period. The embargo on gold exports announced April 19, however, again restricted the bond market, because of the expectation of inflation.

| Amount | City, County, etc. | Rate (%) | Term (Years) | Basis (%) |
|---|---|---|---|---|
| $100,000 | Springfield, Mass. | 4 | 18 1/3 (avg.) | 4.00 |
| 195,000 | Albany Co., N. Y. | 4½ | 5 1/3 (avg.) | 4.31 |
| 300,000 | Reading, Pa. | 4½ | 1-10 (ser.) | 4.36 |
| 402,027 | Auburn, N. Y. | 4.40 | 5.4 (avg.) | 4.37 |
| 124,000 | San Mateo Co., Calif. | 4½ | 12¾ (avg.) | 4.43 |
| 125,000 | Hartford, Conn. | 4½ | 2-26 (ser.) | 4.45 |
| 225,000 | Cumberland, Md. | 4½ | 30 | 4.47 |
| 150,000 | Ansonia, Conn. | 4½ | 1-15 (ser.) | 4.50 |
| 400,000 | Hillsborough Co., N. H. | 4¼ | 1-20 (ser.) | 4.62 |
| 150,000 | Dutchess Co., N. Y. | 4¾ | 8.8 (avg.) | 4.66 |
| 250,000 | Memphis, Tenn. | 4.9 | 8.8 (avg.) | 4.87 |
| 1,000,000 | Alameda Co., Calif. | 4.9 | 8.7 (avg.) | 4.89 |
| 425,000 | New London, Conn. | 5 | 5 1/3 (avg.) | 4.99 |
| 150,000 | West Haven, Conn. | 5½ | 2-16 (ser.) | 5.49 |
| 1,020,000 | Minneapolis, Minn. | 5.59 | 3.9 (avg.) | 5.59 |
| 325,000 | Suffolk Co., N. Y. | 5.70 | 2.7 | 5.65 |

# TRAFFIC CONTROL AND FACILITATION

**Conducted by Publications Committee, Institute of Traffic Engineers, 175 Fifth Ave., New York**

Maxwell Halsey, Chairman, Harry Hemmings, Reyburn Hoffman, Benoit Laberge, Theodore T. McCroskey, Donald M. McNeil, A. J. Naquin, Hawley S. Simpson, Arthur G. Straetz, Peter J. Stupka, Lawrence S. Tuttle, John C. Wrighton

## *Efficient Timing of Signals in Washington, D. C.*

ACCORDING to W. A. Van Duzer, Director of Vehicles and Traffic in the District of Columbia, when traffic signal lights were first installed in Washington, D. C., on the 16th Street section between Euclid and Newton Streets, they were timed on the fixed progressive system, as shown by No. 1 on the drawing. Subsequently they were changed as indicated by No. 2, then recently to flexible progressive, as shown by No. 3.

Though No. 2 appears to be an improvement over No. 1, due to the wider band for travel, it proved to be a disadvantage. The 13-second band on the 65-second cycle does not occur as often as the 10-second band on the 45-second cycle—that is, by No. 1, one second of through travel is obtained in every 4.5 seconds, while by No. 2 there is one second of through travel in every 5 seconds. The common denominator of the two cycles is 45 x 65. In that time the 10-second band occurs 65 times, the 13-second band 45 times—that is 13 x 45 divided by 10 x 65 = 0.9, or the 65-second cycle gives 90 per cent of the road capacity provided by the 45-second cycle. However, the higher speed of No. 2 gives an increased road capacity of approximately 5 per cent, leaving a net decrease of 5 per cent.

With the installation of the flexible progressive timing, the band for through travel was widened to such an extent that, although the cycle necessarily used is greater than that of No. 1, the road capacity was increased by 52.7 per cent over No. 1 and 64.2 per cent over No. 2.

## *Measurements of Highway Traffic Congestion in Denver*

TRAFFIC counts, according to S. A. Ionides and the University of Denver Business Review, are usually made to record the number of vehicles on the road but give no information concerning speeds. As congestion on highways is clearly dependent on speed differences as well as on traffic volume, the recent traffic congestion study of important highways out of Denver included simultaneous counts at two points on the road so that the time spent by each car in traveling from one point to the other was obtained.

This bulletin contains tabulated information showing the monthly and yearly variation of passenger-automobile and motor-truck traffic and the morning and afternoon volumes of vehicles traveling at different rates of speed.

Some of the conclusions developed from the study are:

(a) The speed counts on Federal Boulevard show that the speeds of trucks average much less than the speeds of passenger cars. This means that a large percentage of the passings results from the presence of trucks on the roads.

(b) During the winter months as high as 45 per cent of the traffic on this road consists of trucks. The average for the year is 26 per cent.

(c) Traffic during peak hours of summer week days exceeds 1,000 vehicles on West Colfax and approximately this number on the Brighton Road. This is in close agreement with conditions which the Illinois Highway Department has verified as resulting in congestion on the two-lane highway.

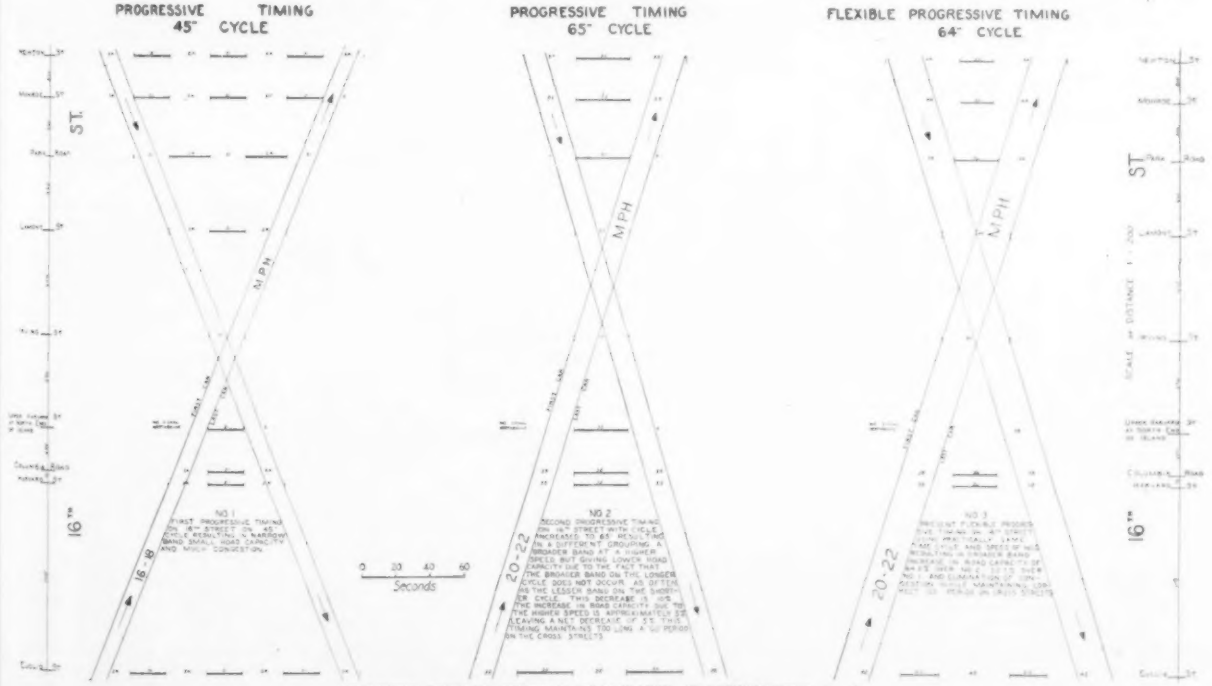
(d) Because of the large percentage of trucks on Federal Boulevard during winter months, less than 1,000 vehicles per hour results in congestion.

(e) At the time the speed counts were made, traffic on the Colorado Springs road was less than 30 per cent of the Federal Boulevard traffic. The average speed of passenger cars was much greater on the former road and suggests that congestion actually existed on the latter roadway at the time the speed counts were made, particularly so since truck traffic was proportionately large.

(f) The speed counts were taken when traffic was light, therefore the congestion problem on other days is correspondingly greater.

## *"Il Traffico Urbano" (City Traffic)*

UNDER this name a new traffic monthly has appeared in Milan, Italy, under the editorship of Dr. Cesare Solare,




TRAFFIC SIGNAL TIMING DIAGRAMS, WASHINGTON, D. C.
The horizontal distance for 60 seconds, as shown, represents 600 feet when taken vertically

Chief of the Administration Police of the city of Milan. While the first numbers are to be published in Italian only, later numbers will carry translations into different languages of the principal and most interesting articles.

The editor aspires to make this review an international clearing-house of opinions and ideas of the world's most prominent traffic experts, and with this in mind he invites foreign traffic engineers to join a committee of editors. The scope of *Il Traffico Urbano* includes every aspect of traffic engineering, traffic planning, coordination of various types of transportation, and the elimination of accidents.

## *Checking Traffic Predictions in Connecticut*

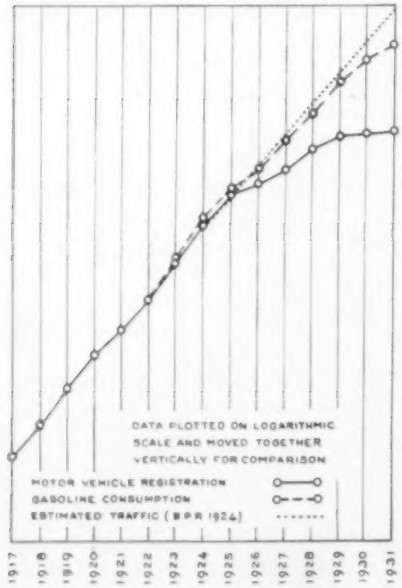
THE Bureau of Public Roads of the United States Department of Agriculture, in cooperation with the Connecticut Highway Department, in 1926 made an estimate of traffic for 1930 in that state. Last year the Connecticut authorities published the results of a traffic survey upon the state highways for 1931, stating that this would serve as a check upon the earlier estimate. L. E. Peabody, Senior Highway Economist of the Bureau of Public Roads, has supplied us with the following summary:

The data of the survey cover the peak traffic of 1931, while the predicted traffic with which the comparison is made is a yearly average for the previous year, 1930. The differences between the data secured and the predicted traffic are further accentuated by the fact that foreign traffic, concentrated in the summer months of the survey, increased from 10 per cent of the total in 1923 to 22 per cent in 1931.

The Bureau's estimates for the 19 stations selected for comparison by the state, total 90,357 vehicles per day; and if allowance is made for the fact that the actual traffic in the state's report is about 30 per cent higher than the average for the full year, the Connecticut figures for these 19 stations would total 89,923 vehicles per day.

The state survey confirms the use of gasoline consumption, previously employed by the Bureau in similar surveys, as the more accurate factor in traffic prediction. Gasoline consumption data were not available when the Bureau's forecast was made, since gasoline consumption records extend back only to 1922.

The traffic forecast made in 1924 by the Bureau is compared with gasoline consumption and motor-vehicle registration in the accompanying chart. This was the first traffic forecast made by the Bureau, and, so far as known, the first ever made for any state. Data available were limited, and the methods in use have since been materially improved. Yet the chart indicates that this somewhat primitive forecast varies but slightly from the record of gasoline consumption, which undoubtedly reflects traffic volume most accurately.



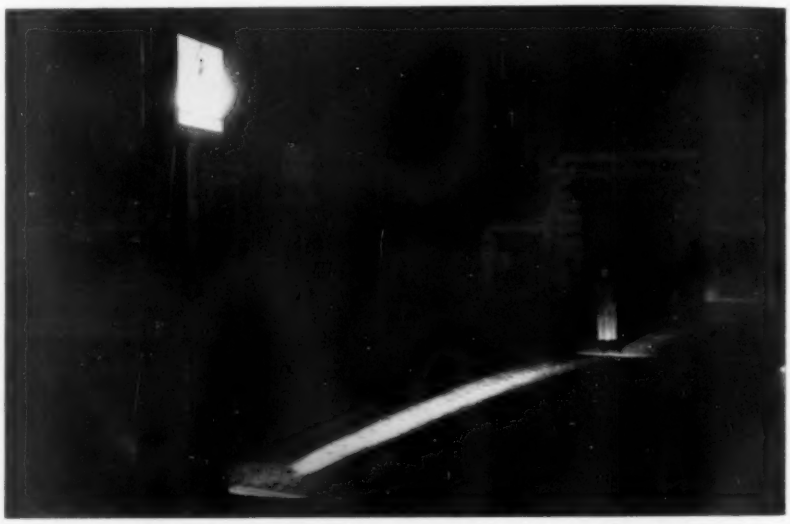

CONNECTICUT TRAFFIC ESTIMATE

## *Illuminated Pedestrian Crossing in Paris, France*

ACCORDING to a report from Léon Raepsaet of Paris, a new type of illumination is being tried out for pedestrian crossings. It is apparently to be used on high-speed streets, in the absence of other illumination, at points where pedestrians are particularly apt to cross the street at night.

The light has two separate functions. The top of it serves as an illuminated sign, displaying a picture of a pedestrian. This is bordered by a triangle, the symbol for one of the standard signs meaning caution, and informs the motorist of the presence of a pedestrian crossing. The second function is to floodlight the pedestrian if any is crossing the street. This is accomplished by three spotlights which illuminate a narrow path across the street, by means of three overlapping elliptical spots of light on the pavement. These lights throw a beam not over 3 feet in height directly across the street and cannot cause glare in the eyes of approaching motorists.

The photograph, furnished by the Light Signaling Department of the Préfecture, indicates the only one which has so far been installed.



LIGHTING A STREET CROSSING FOR THE PARIS PEDESTRIAN

## *Save by Installing Traffic Equipment Now*

RECENT traffic equipment installation contracts awarded by the Bureau of Traffic Planning, Pittsburgh, Pa., indicate that low prices make the present time an advantageous one to install traffic equipment. Instead of the effect of the depression being that of calling a halt to public works of this character, a far-sighted program would be that of rushing all possible planning studies in order to benefit by the present low prices. Any equipment on hand should be installed at once.

The Bureau of Traffic Planning installation contracts were found to be 50 per cent under the estimated cost, with the estimated cost being that generally charged in he latter months of 1931. The contracts were for varied types of equipment installations, including the placing of 10,000 permanent roadway insert markers; the erection of traffic signals at ten intersections; and the marking of eleven through traffic streets by means of illuminated, reflector, and metal signs.

## *Traffic Engineering in Town Planning*

FRITZ MALCHER, town and traffic planner, and Kenneth Gardner, landscape architect and town planner, have opened an office at 114 East 37th Street, New York City, as consultants for Steadyflow traffic as a basis for town and regional planning. Both Mr. Malcher and Mr. Gardner have recently returned from Europe, where they have studied recent trends in town and traffic planning in the important cities abroad.

Mr. Malcher is an Affiliate Member of the Institute of Traffic Engineers.

# To Restore Land Values by Changing Slums into Parks

***(A Communication from the Editor of The American City, appearing in The New Republic for May 10, 1933)***

IN these days of depressed land values and delinquent taxes, among the most intolerable of municipal liabilities are slums and blighted areas. From such public enemies no large city and few small cities are free. To transform these liabilities into dividend-paying assets is a major opportunity for constructive statesmanship. The problem is not, as is generally assumed, insoluble. On the contrary, if scientifically financed, such projects can be made—to use the now popular term—"self-liquidating."

Assume, in a given city, that 3 per cent of the taxable real estate is in slums or blighted areas—decayed or decadent districts, where not even the depressed real estate values of today can be maintained by the depressed human beings inhabiting these squalid "homes." Assume that by waving a wand the other 97 per cent of real estate ownership could transform this wretched 3 per cent of value into playgrounds and parks and sites for future public buildings. Can it be doubted that the result, immediate or soon, would be an increase of many times 3 per cent in the aggregate value of taxable land in that city? And can it be doubted that there would be even greater dividends in reduced tuberculosis, juvenile delinquency, adult crime and other sources of moral and physical infection?

Instead of an imaginary wand, let us search for practical methods of procedure. It may be assumed that the enriched 97 per cent of land ownership would gladly pay the 3 per cent of cost out of its resultant benefits. The same principle would apply, whether the figures were 95 per cent and 5 per cent respectively, or 98 per cent and 2 per cent. The immediate problem is the financing of the purchases from which these future profits will accrue.

Here is an opportunity for the Reconstruction Finance Corporation which an act of Congress could readily authorize. Let the Federal Government provide the purchase money to buy up and transform those slums and blighted areas into public open spaces. Let the work of demolition and beautification be done by the cities, but let the R.F.C. hold title to the land until its loan is repaid in full. One method of such repayment would be for the cities to levy, when good times return, a special land tax at a low rate—say 5 mills on the dollar of taxable land values, this tax to continue in each case until the R.F.C. loan to that particular city has been amortized. An alternative or additional source of revenue would be special assessments for the benefits accruing to property in the vicinity of the newly created open spaces.

The desirability of slum clearance by some such method as this can hardly be doubted. Its constitutionality may be questioned; but it seems much more sound, both as to the public purpose to be achieved and as to the security to be offered, than many other uses of Federal funds now practiced or under serious consideration with high legalistic blessing. If Congress cannot or will not pass the necessary legislation, state or municipal funds might in many cases be made available. Special "Open Space Authorities" might, if necessary, be created as instrumentalities of the several states, with the right to issue their own bonds, the proceeds to be expended and amortized in a manner similar to that suggested for R.F.C. funds.

### Housing the Dispossessed

If we are to embark on a vigorous policy of slum clearance, thought must be given, of course, to the adequate housing of the dispossessed tenants and homeowners. In most cities there is a temporary surplus of vacant houses and apartments, such as they are—a surplus which is the result of shifting population and of "doubling up," due to unemployment. There probably is not a single large city, however, and few smaller ones having even today a surplus of modern, sanitary, low-rent housing accommodations. Almost everywhere there exists, in short, not a real surplus of housing but a very real surplus of unemployment.

Concurrently, therefore, with the transformation of the slums into parks, provision must be made for such new housing as is now needed for former slum dwellers, and for the renovation outside of slum areas of existing sub-standard structures which may be worth saving. No greater stimulus could be given to the building or renovation of low-rent homes by private enterprise—with or without the aid of R.F.C. loans—than would come from the prompt demolition of the congested and insanitary areas of our cities. This stimulus would apply not only to the meeting of immediate needs, but to the planning by foresighted developers of the large scale housing projects sure to be increasingly needed when the forces now at work bring our long-overdue economic revival.

Several safeguards would, of course, be necessary in carrying out the procedure suggested in the foregoing paragraphs. The problem of fair prices for the land to be acquired for open spaces—a problem always inherent in the power of eminent domain—would be the most difficult hurdle. The very fact, however, that a special land tax would be levied to cover the cost of the properties thus acquired, would make land owners more watchful than usual to prevent over-payment. Acquisition at fair prices could be aided by having the city invite tenders from owners of more property than would probably be required, thus giving a wider choice of available areas and establishing a range of prices to which the courts could give judicial consideration in condemnation proceedings for properties not obtainable at fair prices by voluntary sale. The problem of land acquisition is further simplified just now by the fact that in many cities numerous parcels of tax-delinquent real estate have come into possession of the municipality or could be readily acquired for public purposes at small cost.

Another practical problem of great importance would be the selection of the sites to be cleared, and the replanning of such areas for their most desirable open space uses. Here, obviously, is an important task for city planning commissions, and for the park and recreation boards or departments of the city governments.

The transformation of slums into public open spaces would go far to meet the objection, now so generally voiced by owners or mortgage holders of non-slum property, that housing loans by the R.F.C. would give them unfair competition. If simultaneously with the stimulation of well-planned, low-rent housing projects on large tracts of land, we can by the method above suggested take destructively competitive tracts of slum property permanently off the market, we shall by these combined operations help to increase and stabilize land values, give added opportunity to private enterprise in home building, stimulate employment, both public and private, and bring our American cities more nearly into line than heretofore with our attainable American ideals.

HAROLD S. BUTTENHEIM.

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# THE CITY'S LEGAL RIGHTS AND DUTIES

**Conducted by A. L. H. STREET, Attorney at Law**

### Contracts

Benefits from street improvements held not to render city liable under contract awarded without competitive bidding (West Virginia Supreme Court of Appeals: *Burgess v. City of Cameron*, 166 S. E. 113).

City printing contract held not invalid as being based on insufficient specifications, no bidder being prejudiced (Michigan Supreme Court: *Berghage v. City of Grand Rapids*, 246 N. W. 55).

City held not bound by engineer's unauthorized contract (Texas Court of Civil Appeals: *City of Corpus Christi v. Johnson*, 54 S. W. 2d, 865).

Street-filling contract held not to impliedly warrant against subsidence of original surface (Pennsylvania Supreme Court: *Stange v. City of Philadelphia*, 162 Atl. 833).

### Finance

Bond interest funds held not divertible to operating expenses on the ground of governmental necessity (Florida Supreme Court: *Keefe v. Adams*, 143 So. 644).

### Garbage Disposal

City held liable for fire spreading from city dumping ground, under certain conditions (California District Court of Appeal: *Pittam v. City of Riverside*, 16 Pac. 2d, 768).

### Initiative and Referendum

Year's contract for legal advertising in newspaper was not subject to referendum provisions of Atlanta charter (Georgia Supreme Court: *Key v. Wofford*, 166 S. E. 204).

### Licenses

$50 license fee imposed upon wholesale dealers in fruits, etc., held reasonable (Texas Court of Civil Appeals: *City of Antonio v. Teague*, 54 S. W. 2d, 566).

Peddlers' license ordinance held not invalid as occupation tax measure (Arkansas Supreme Court: *Rose v. City of Pine Bluff*, 52 S. W. 2d, 979).

$250 annual license fee for retail coal dealers held excessive; classification of cooperative purchasers as dealers held unreasonable (New York Supreme Court, Albany County: *Smart v. City of Albany*, 260 N. Y. S. 579).

Chiropractor illegally practicing without state certificate held not subject to license ordinance (Alabama Supreme Court: *Jackson v. City of Sylacauga*, 144 So. 125).

Statute fixing maximum license fees to be imposed by cities against transient merchants held not to authorize a fee in excess of reasonable cost of regulation (Pennsylvania Court of Common Pleas, Berks County: *City of Reading v. Deisher & Kendall*, 24 Pa. Munic. Law Rep. 111).

Bus company held not liable on theory of implied promise to pay license fee provided for by charter but not actually imposed (Minnesota Supreme Court: *City of St. Paul v. Twin City Motor Bus Co.*, 245 N. W. 33).

### Motor Vehicles

Ordinance penalizing driving while intoxicated held void as subject covered by state-wide statute (North Dakota Supreme Court: *City of Fargo v. Glaser*, 244 N. W. 905).

### Municipal Judgments

Money judgment held not enforceable against municipal golf course (Florida Supreme Court: *City of Coral Gables v. Hepkins*, 144 So. 385).

Judgment is not enforceable against property needed for public purposes: statute governing set-off of claims held inapplicable to municipalities (New Jersey Supreme Court: *Township Committee of Piscataway Township v. First National Bank*, 163 Atl. 101).

### Municipal Utilities

Municipal water-works ordinance held not invalid as unauthorizedly creating debt because providing for payment for water used by city (Kentucky Court of Appeals: *Williams v. City of Raceland*, 53 S. W. 2d, 370).

Three-year lease of municipal light plant, with option in city to renew, and to sell to lessee on electoral assent, upheld (Michigan Supreme Court: *White v. City of Grand Rapids*, 244 N. W. 469).

City could discontinue water and electric service to delinquent consumers; statute creating lien for charges upheld (Washington Supreme Court: *McCormacks v. City of Tacoma*, 15 Pac. 2d, 688).

### Officials' Liability

Mayor held not liable for wrongfully refusing license, without malicious intent (Massachusetts Supreme Judicial Court: *Jaffarian v. Murphy*, 183 N. E. 110).

Treasurer held not liable for paying warrants in proper form (Connecticut Supreme Court of Errors: *Sullivan v. Willis*, 163 Atl. 407).

### Parks

Creation of football field out of part of park held not to violate adjoining property owners' rights (Michigan Supreme Court: *Briggs v. City of Grand Rapids*, 245 N. W. 555).

### Sewers

Statute held to authorize sewer assessment against property on opposite side of highway forming municipal boundary (Pennsylvania Court of Common Pleas, Delaware County: *Aldan v. Baxter*, 24 Pa. Munic. Law Rep. 86).

### Special Assessments

Judgment reducing street improvement assessment held invalid because of nonjoinder in suit of affected property owners (Kentucky Court of Appeals: *City of Louisa v. McClure*, 53 S. W. 2d, 337).

City held subject to compulsory reassessment where original street assessment was invalid, but not liable in damages (United States Circuit Court of Appeals, Tenth Circuit: *Powell v. City of Ada*, 61 Fed. 2d, 283).

City condemning wider strip of land than was used for street improvement held not entitled to assess property separated from the street by the excess strip, as abutting upon improvement (Michigan Supreme Court: *Linski v. City of Detroit*, 244 N. W. 483).

Assessments for street improvements held not properly spread between lots in triangular block (Kentucky Court of Appeals: *Washer v. Henry Bickel Co.* 55 S. W. 2d, 372).

Defects in sidewalk construction held not to avoid special assessment (Kentucky Court of Appeals: *Stewart v. Town of South Ft. Mitchell*, 55 S. W. 2d, 37).

### Street Railroads

Danger of street-railroad abandonment held to support relief to company by modifying franchise (Ohio Court of Appeals, Richland County: *Ricketts v. City of Mansfield*, 183 N. E. 181).

### Streets

One reserving exclusive public utility rights in streets dedicated by him held entitled to damages on condemnation by city of right to lay water mains, etc. (Florida Supreme Court: *City of Jacksonville v. Shaffer*, 144 So. 888, 892).

City held entitled to compel removal of filling station adjuncts that obstructed use of street (Oklahoma Supreme Court: *City of Stillwater v. Lovell*, 15 Pac. 2d, 12).

Ordinance authorizing erection of gasoline pumps, etc., in streets held void (Illinois Supreme Court: *People v. Wolper*, 183 N. E. 451).

### Taxation

Municipal tax on gasoline sales upheld (New Mexico Supreme Court: *Continental Oil Co. v. City of Santa Fe*, 15 Pac. 2d, 667).

Statute held to authorize imprisonment of delinquent taxpayer (Pennsylvania Court of Common Pleas, Westmoreland County: *Commonwealth v. Keating*, 24 Pa. Munic. Law Rep. 33).

### Traffic Regulations

Power to designate "through traffic" streets was validly vested in city manager of safety (Colorado Supreme Court: *Staley v. Vaughn*, 17 Pac. 2d, 299).

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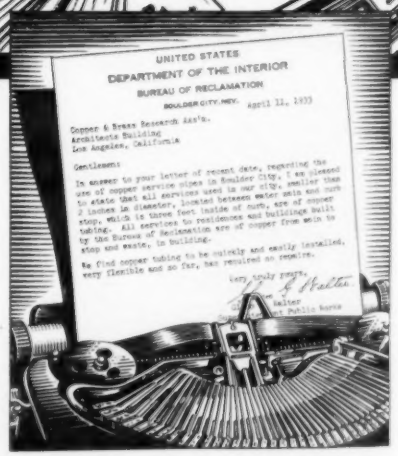
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
BOULDER CITY, NEV. April 11, 1933

Copper & Brass Research Ass'n.
Architects Building
Los Angeles, California

Gentlemen:

In answer to your letter of recent date, regarding the use of copper service pipes in Boulder City, I am pleased to state that all services used in our city, smaller than 2 inches in diameter, located between water main and curb stop, which is three feet inside of curb, are of copper tubing. All services to residences and buildings built by the Bureau of Reclamation are of copper from main to stop and waste, in building.

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# MUNICIPAL AND CIVIC PUBLICATIONS

**Prices quoted do not include postage, unless so stated.**

## Local Government

*Local Government in the United States: A Challenge and an Opportunity.—By Murray Seasongood. Harvard University Press, Cambridge, Mass.* 1933. 145 *pp.* $1.50 *from* THE AMERICAN CITY.

The five papers presented in this book were the 1932 Godkin Lectures at Harvard University. The first, "City Government—Cincinnati," tells the story of a reform movement that has succeeded in five successive elections and has brought Cincinnati to the rank of one of the two best-governed cities in the country (Berkeley, Calif., the other). "County Government—Hamilton (Cincinnati) County" explains the governmental structure of Hamilton County, in which defects in form have been overbalanced by resolute insistence upon good government in county offices. Eight of eleven county offices are now held by candidates of the Citizens, the fusion group for good government. The county offices held by Citizens are stated to show decrease in expense, with increase in efficient service to the taxpayer, and to be the lowest in comparative cost of any county in Ohio; this is in contrast with the extravagance of other offices in the county. Lectures III and IV are on "Hindrances to Good Local Government" and "Helps." The final lecture, "Changing Views—The Remedy," discusses home rule; municipal ownership of public utilities, including housing; the protection of civic beauty; city planning and zoning; municipal liability; civic education; and the profession of local administration and its standards.

## International Congress

"Proceedings and Additional Reports of the Vth International Congress of Local Authorities," held in London in May, 1932. This report of 133 pages is in English, French and German. It covers the meetings held on three days, at which speeches were made and greetings expressed by delegates from a number of different countries. The American representatives were Louis Brownlow, Director of the Public Administration Clearing House, Chicago, Ill.; Dr. Luther Gulick, Director, Institute of Public Administration, New York; Dr. Samuel C. May, Director, Bureau of Public Administration, University of California, Berkeley, Calif. Questions of local government were discussed in the light of practical experience. The list of members of the British Organization is given, and of the International Union of Local Authorities. Brief descriptions of the receptions, visits and tours are included. (Apply to the International Union of Local Authorities, 3bis rue de la Regence, Brussels, Belgium.)

## Government

*Your Governments: An Outline for Every American Voter (with charts).—By Wallace S. Sayre, Ph.D., Instructor in Government, New York University. Harper & Brothers, New York.* 1932. 103 + *XX pp. Charts.* $1.25 *from* THE AMERICAN CITY.

The structure of our Federal, state and local governments is set forth clearly in this volume, making it a convenient book of easy reference. The powers and functions outlined indicate to the citizen his privileges and obligations, by clear explanations of the processes of governmental and political organization and activities. Bibliographical references are given throughout.

## Water Supply

The Indianapolis Water Company has issued a pamphlet entitled "Water Service," attractively illustrated, containing general material on the development of water supply in early times and its great improvement up to the present, and a detailed account of the evolution of water service for Indianapolis and of the work of this company. 47 pp. (Apply to Howard S. Morse, General Manager, Indianapolis Water Co., 113 Monument Circle, Indianapolis, Ind.)

## Roads

The Illinois Commission on Future Road Program transmitted its Report to the Governor and General Assembly on January 17, 1933, in a pamphlet of 73 pages. Many tables. Forty conclusions and recommendations are summarized. The basic plan includes the orderly enlargement and development of the primary road system, and a simultaneous development of the county trunk, state aid or secondary road system; adequate relief for city streets; and an orderly improvement of the township roads. 5c in stamps for mailing. (Apply to the Municipal Reference Library, 1005 City Hall, Chicago, Ill.)

## Finance

In the Michigan Government Series of reports to the Michigan Commission of Inquiry into County, Township and School District Government, is a report, published January, 1933, on "Organization and Cost of County and Township Government," by Arthur W. Bromage and Thomas H. Reed, of the University of Michigan. IX + 143 pp. Paper-bound. 47 tables, 2 charts. The chapters cover the following: the origins of local government in Michigan; comparative county government; the cost of county government; general and financial administration of counties; the administration of justice in counties; consolidation of counties; organization and functions of townships; township financial administration; the cost of township government; comparative township government; and the recommendations made by the authors of the report. These recommendations include an immediate consolidation of small townships, pending the abolition of the township, and the reorganizing of the present machinery of county government. The appendices contain important material for reference. (Send 15 cents, for cost of mailing, to Lent D. Upson, Director of Inquiry, Detroit Bureau of Governmental Research, 936 First National Bank Bldg., Detroit, Mich.)

## Traffic

The third annual meeting of the Institute of Traffic Engineers was held in Washington, D. C., October 6, 1932. Its "Proceedings" have been issued in a pamphlet of 139 mimeographed pages, which may be obtained for $2.50 from the Institute, 175 Fifth Avenue, New York. The papers, prepared by experts in the field of traffic control and facilitation, have the following titles: The Traffic Signal vs. the Full Stop at Outlying Intersections; Graph Making and the Triple Offset; "Protective Safety Zones; Vehicle Turning Movements; Parking Facilities and Habits in the Central Business District of Los Angeles, Calif.; Some Practical Aspects of Traffic Equipment Installation; Traffic Accident Indexes; A Composite Index Number for Quantitative Comparison of Traffic Accident Statistics; What We May Expect as the Future of Traffic Accidents; The Legal Rights of Pedestrians; The Place of the Street Car in Traffic; The Selection of Pavement Types for Highway Surfaces.

## Regional Planning

"Crowds" is a 12-page booklet of effective drawings by Frank Duryea Deats, with a minimum of text prepared by the New York Regional Plan Association in an "attempt to reduce to popular form the fundamental fact that there is plenty of space within a reasonable distance of the center of the world's largest metropolis, if we will but use it to the best advantage." Free in reasonable quantities. (Apply to the Association, 400 Madison Ave., New York.)

## Markets

The Bureau of Agricultural Economics of the U. S. Department of Agriculture has revised (January, 1933) its "Suggestions for an Ordinance to Establish, Locate, Regulate, and Maintain a Public Farmer's Market, and for Other Purposes." 12 mimeographed pp. (Apply to the Bureau, Washington, D. C.)

## Municipal Administration

*Current Municipal Problems.—By Ernest S. Griffith, Professor of Political Science, School of Citizenship and Public Affairs, Syracuse University. Houghton Mifflin Company, Boston.* 1933. 293 *pp.* $2.00 *from* THE AMERICAN CITY.

The significance of municipal government in its effect on human beings is the particular interest of Professor Griffith in this engrossing volume. He recommends the study of the history of our municipal institutions and problems as the approach which supplements and corrects all others—the descriptive, the statistical, the administrative, the legal, the comparative, the philosophical. The conventional causes of political corruption are grouped under two headings—defects of mechanism, and defects of motive—the need of charter reform, and self-seeking officeholding. But even after the application of remedies for these defects, political reform is not permanent, owing to the presence in cities of many diverse groups—economic, racial, religious, making uniformity of outlook impossible. The ultimate remedy, in the author's opinion, lies with the forces making for tolerance and understanding, as prerequisite to the development of a community of ideals. A study of quantitative methods in ascertaining public opinion is given, and there is a chapter on understandable ways of measuring the efficiency of city administration. The relation of cities to their states and to the nation is dealt with. The question of what a charter can do to assure good city government is answered. The author considers the city manager plan "the best and most logical form of charter yet evolved to which a city may turn whose electorate genuinely wish better government more than special favors," and he analyzes its defects. The principles of metropolitan government are considered, and its dilemmas. The work of voluntary agencies and of individuals is evaluated. In the final chapter, education and religion are presented as the dynamics of city government.

## Planning for Recreational Areas

*Sportplatzbau als Problem der Stadtplanung (Recreational Facilities as a Problem of City Planning).—By Dr. Ing. Arthur Manthey. Rudolph & Meister, Kassel, Germany.* 1933. 151 *pp. Paper-bound. Plans, charts, tables. Rm.* 6.80.

The use of leisure time is now demanding so much attention from those who realize its effects upon health and morale and seek to make it an asset for the present and the future, that haphazard and casual provisions for play and sport are no longer tolerated by intelligent communities. This book advocates the definite and adequate inclusion of recreational areas among the essentials of a city plan. The historical portion of the discussion covers the extension of the playground movement from the United States to Germany. The thorough study presented shows how the fundamental problems—economic, legal, political—of planning for athletic and play fields may be dealt with in Germany, and develops the practical and administrative principles involved. A complete bibliography of German publications is given, and certain important American references are included.

## Municipal Organization

"History—Duties—Organization of the Municipal Departments, City of Los Angeles—Part 1, 1932-1933," is a series of papers prepared for the Los Angeles City Government Conference in cooperation with the School of Government, University of Southern California. V + 71 quarto pp. They are descriptions of the work of the city's departments, given by the department heads themselves. Two more volumes are to be published. This one covers the City Clerk's office; the Bureaus of Budget and Efficiency, Building Construction, Street Lighting, Engineering, Right of Way and Land, Assessments, and Standards; the Mechanical Bureau; the Board of Public Works; the Departments of Supplies, City Planning, Public Library, and City Parks. (Apply to the Conference, Los Angeles, Calif.)

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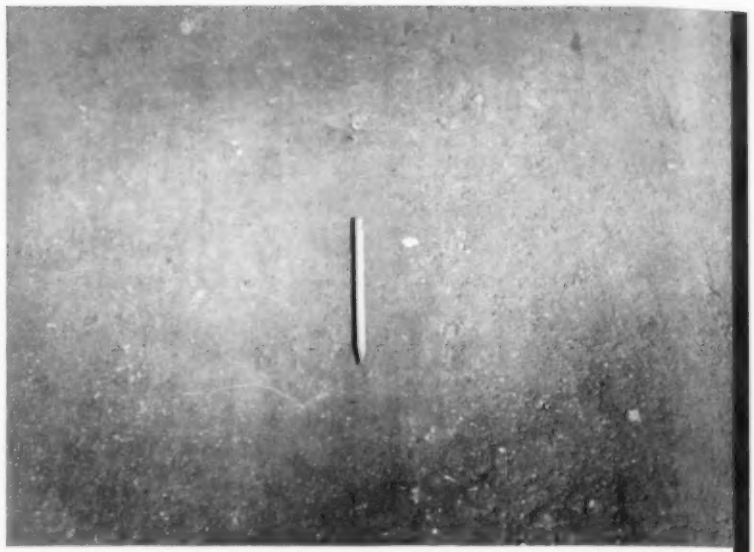

● **Close-up views of Stabilized Gravel Road, showing pencil impression on traveled way (above), taken one day and (below) seven days after maintenance. Note the surface durability evidenced by comparison of the impression.**

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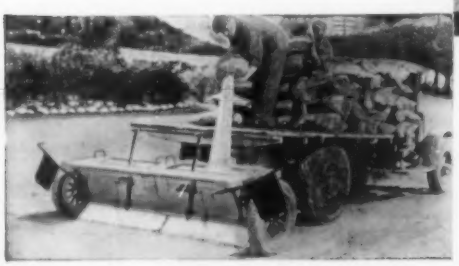

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### Water Purification

*"Standard Methods for the Examination of Water and Sewage."—Seventh Edition. Published by the American Public Health Association, New York. Prepared in cooperation with the American Water Works Association.* $2.00 *from* THE AMERICAN CITY.

The previous edition of "Standard Methods" is dated 1925. In the new edition many important additions and changes occur. As examples, the methods of total hardness have been extensively revised; the ortho-tolidine test for chlorine is presented more exactly; the determination of the bio-chemical oxygen demand has been rewritten; the use of brilliant green lactose peptone bile is allowed in conjunction with standard lactose broth for water purification and control. The 23 methods of analysis which are not yet recommended as standard procedure but which may be of use are presented in abstract and with references.

### Metropolitan Regions

*The Metropolitan Community.—By R. D. McKenzie, Professor of Sociology, University of Michigan. McGraw-Hill Book Co., Inc., New York. 1933. XI + 352 pp. Maps, charts, tables.* $3.50 *from* THE AMERICAN CITY.

This is a volume in the series of monographs on Recent Social Trends in the United States prepared under the direction of President Hoover's Research Committee on Social Trends. The study traces the rise of the metropolitan regional community, showing the forces that are developing it, the form it is taking, and the problems of relationships and functions involved in population shifts. Modern means of communication have brought about the city region, which offers to an increasing number of adjacent units, not politically a part of the city, the economic and cultural services which the city furnishes. Blighted areas are one of the results of the outward drift. They lie close to the business center of the city, and represent the "misuse and underuse" of land, in contrast with new and inviting subdivisions. Facilities for mass transportation are, with certain exceptions, inadequate, and this necessitates the construction of arterial motor thoroughfares, causing land condemnation, street widening, construction of terminal facilities, and problems of taxation and special assessments. The political independence of the large number of communities in such a super-city involves serious difficulties for planning bodies. The complex mechanism of metropolitan society, in times of economic depression, makes individual welfare unstable and insecure. Thus regional planners are forced to consider, in addition to the physical structure and the municipal functions of the super-city, the economic and social activities of its increasing population.

### Housing

"The Planned Community, with Analytical Charts of American and European Housing, Compiled for the Housing Exhibition of the Subcommittee on Housing, A. I. A. 1933" is a quarto pamphlet of 24 pages, reprinted from the April, 1933, issue of *The Architectural Forum*, 220 E. 42d St., New York. It is a telling presentation of contrasts between modern community planning of housing and existing blighted urban and suburban areas, in a number of American cities and in several European countries. (Apply to the magazine.)

A monthly letter is being issued in mimeographed form by the Housing Information Bureau of the Housing Section of the Welfare Council, 122 E. 22d St., New York. Reports are given of the meetings of the Housing Section and its committees; also of legislative action on housing, and other items of housing progress. Recent pertinent pamphlets and magazine articles are noted, and announcements of coming events in the field are made. (Apply to the Bureau.)

### Public Health

"Organization and Administration of Public Health," by N. Sinai, D.P.H., University of Michigan. January, 1933. 63 pp. Maps, tables. A report to the Michigan Commission of Inquiry into County, Township and School District Government. 10c postage. (Apply to Lent D. Upson, Director of Inquiry, Detroit Bureau of Governmental Research, 936 First National Bank Building, Detroit, Mich.)

### Roads—Bridges

"Low Cost Roads and Bridges," by Victor J. Brown, C. E., and Carleton N. Conner, Editor and Associate Editor, respectively, of *Roads and Streets*. Gillette Publishing Co., Chicago. 1933. XII + 544 pp. Photographs, charts, tables. The purpose of the book is to present the best practice in design, construction and maintenance of low-cost roads, including low-cost bridges and culverts, in such a way that it will be of service not only to engineers, but also to boards of county commissioners in deciding what to do in the improvement of local and light traffic roads. ($6.00 from THE AMERICAN CITY.)

### Tax Reform

*The Economic Basis of Tax Reform.—By Harry Gunison Brown, Professor of Economics in the University of Missouri. Lucas Brothers, Columbia, Mo.* 1932. *XII* + 359 *pp.* $2.00 *from* THE AMERICAN CITY.

A clear and readable statement of the orthodox single tax point of view. The author discusses his subject under the following divisions: Earned and Unearned Incomes, Inequality and Taxation; Tax "Relief" for Real Estate; The Rent of Land and Its Taxation; and A Taxation "Complex" of Some Contemporary Economists. Scoring the writers of textbooks on economics who ignore or treat casually the arguments for high land-value taxation, he says: "What is there in our economic life more significant—more portentous, indeed—than the fact that a majority must pay the relatively few for the privilege of living and working on those parts of the earth which geological forces and community development have made desirable?"

### The General Sales Tax

"Why the Sales Tax Is Bad," by Mabel L. Walker, Executive Secretary of the General Welfare Tax League, presents the evils inherent in all forms of general sales taxation: (I) From Business Point of View; (II) From Treasury Point of View; (III) From Social Point of View; and (V) Peculiar Disadvantages of State Sales Taxes, with particular reference to the experience in Mississippi. A selected list of references recommended for a study of the subject is included; also vigorous statements by distinguished economists denouncing the general sales tax. 16 pp. 10c; $3.00 per 100. (Apply to General Welfare Tax League, 309 E. 34th St., New York.)

The University of North Carolina Extension Bulletin for January, 1933, consists of a debate handbook on the sales tax, compiled by E. R. Rankin. There are a large number of references to source material, many of them local to North Carolina. 87 pp. 50c. (Apply to University Extension Division, Chapel Hill, N. C.)

### Real Estate Development

"Rules for the Development of Real Estate, Adopted by the Planning Board, Reading, Mass." is a pamphlet of 20 pages, designed to establish an approved and standardized system for the laying-out of new residential districts. The rules are not legally binding, but are intended to supplement the Zoning By-law adopted by the town, by encouraging owners of new real estate developments to maintain standards that will mean an increase in taxable properties and a proportionate increase in the town revenues. The rules are not merely stated; they are explained and illustrated by photographs and charts, and are well worth study. (Apply to the Planning Board, Reading, Mass.)

### Public Safety

"1932 Transactions of the National Safety Council, Inc.": Twenty-first Annual Safety Congress—Street and Highway Traffic Section, Child Education and Home Safety Sessions, held in Washington, D. C., October 3-7, 1932. 72 pp. $1.00. (Apply to the Council, 20 N. Wacker Drive, Chicago, Ill.)

### Fire Prevention

"Proceedings of the Fifth Annual Northwest Fire School," held at the University of Minnesota and the Minneapolis Fire Department Fire Drill School, Sept. 12-16, 1932. 40 pp. Illustrated. $1.00. (Apply to League of Minnesota Municipalities, Minneapolis, Minn.)

### Taxation

*"Federal and State Tax Systems."—By The Tax Research Foundation. Prepared under the direction of the New York State Tax Commission. Edited by Mayne S. Howard. The Commerce Clearing House, Inc., Chicago. 4th edition.* 1933. *209 pp. folio.* $10.00.

Intelligent action, in taxation as in other matters, depends upon accurate and unbiased information. The publication of this yearbook represents a long step forward in supplying such necessary and impartial data in the field of government finance. The new edition contains charts showing the tax systems of all of the states and the United States and of a number of foreign countries, and status tables of various taxes by states and countries. The financing of education and emergency relief in the various states is also shown. A new feature is the section giving recent tax collection totals in various jurisdictions. It is interesting to note that the total Federal, state and local tax collections (not including customs) in this country are estimated at slightly more than $9,000,000,000 in 1931. This is considerably less than estimates frequently furnished by some of the more ardent budget-slashing advocates.

This monumental undertaking is the result of the collaboration of many experts in the field of taxation. One hundred and fifty such collaborators, either in this country or abroad, are acknowledged in the introduction. The charts for each state or country were prepared by a man or group familiar with the local tax system. "Underlying the whole project is the determination to take the multiplication table so far as possible as the model of presentation," declares the editor in the foreword. "It is intended to keep it all as brief, as colorless—and as effective—as that."

MABEL L. WALKER.

### Assessments

In *Civil Engineering* for April, 1933, Philip H. Cornick, of the Institute of Public Administration, Inc., New York City, discusses the question, "What Is a Benefit Assessment?" and illustrates his definition by a scheme for financing levee and drainage projects authorized by the Texas statutes; proceeding then to the visualization of the principle of this procedure by the assumed making of a relief map showing "value topography," and the estimated effect of the proposed improvement on that value pattern. The difficulties of estimating benefits are shown to be great, and the results of the work often more or less appalling. Possible improvements in procedure are briefly noted, the second being the "special assessment tax," which would obviate the necessity of advance estimates of increased values due to improvements and would automatically adjust individual burdens to such benefits. 50c. (Apply to the magazine, 33 W. 39th St., New York.)

### Savings Through Metering

The Water Meter Institute (1427 Eye St., Washington, D. C.) has recently issued a booklet of 48 pages, "The Business Basis of Metered Water." It presents the opinions of authorities concerning the value of metering, with supporting information on per capita consumption and water-works economies taken from actual case histories of metering. (Apply to the Institute.)

## Other Reports Received

CINCINNATI, OHIO.—Municipal Activities, 1932. 64 pp.

DETROIT, MICH.—Analysis of the Debt of the City of Detroit as at February 28, 1933. Detroit Bureau of Governmental Research, Inc. 23 pp., multigraphed. $1.00.

MICHIGAN.—The Tax Situation in Michigan—A Survey by Harcourt L. Caverly. Michigan Municipal League, 1933. 66 pp., multigraphed. $1.00.

ROCHESTER, AND MONROE COUNTY, N. Y.—A Summary of the Survey and Plans for Port Development in Rochester and Monroe County. Monroe County Regional Planning Board, 1932. 29 pp., mimeographed, and maps.

TORONTO, ONT.—Annual Report, Department of Street Cleaning, 1932. 32 pp.

WISCONSIN.—Committee on Land Use and Forestry. Report. 156 pp. Send $1.00 to Bureau of Purchases, State Capitol, Madison, Wis.

# There's the Killer!

**MOTORCYCLE POLICE PROVE BEST PROTECTION**

Let us send you the facts about traffic control by motorcycles—and about the 1933 Harley-Davidsons for police service . . . A postcard will bring you some illustrated literature well worth filing.

RECKLESS DRIVING — zigzagging through traffic — ignoring stops and control lights — that's the kind of motoring that *kills people*, and it's the kind of motoring that Police Motorcycles *prevent*.

No other means of traffic regulation is so effective. The glimpse of a motorcycle officer's uniform—or even of his Harley-Davidson — checks traffic carelessness instantly.

Communities with low accident totals and improving traffic conditions have adequate Motorcycle Patrols, almost without exception. Is *your* department fully motorcycled?

HARLEY-DAVIDSON MOTOR COMPANY
DEPARTMENT M MILWAUKEE, WISCONSIN

**HARLEY-DAVIDSON**
*The Police Motorcycle*

# CONVENTIONS—WHEN AND WHERE

**(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)**

MAY 2-5.—WASHINGTON, D. C.
*Chamber of Commerce of the United States of America. Annual meeting.* Secretary, D. A. Skinner, 1615 H Street, N. W., Washington, D. C.

MAY 4-5.—BALTIMORE, MD. (75)
*Maryland-Delaware Water and Sewerage Association. Annual conference.* Secretary, A. W. Blohm, 2411 North Charles Street, Baltimore, Md.

MAY 9-10.—CHICAGO, ILL.
*National Conference on the Renewal of Home Building.* Secretary, Henry A. Guthrie, Room 1041, 310 South Michigan Avenue, Chicago, Ill.

MAY 11-12.—WASHINGTON, D. C.
*American Road Builders' Association. Annual meeting.* Engineer-Director, Charles M. Upham, National Press Building, Washington, D. C.

MAY 11-13.—BELLINGHAM, WASH. (115)
*American Water Works Association—Pacific Northwest Section. Annual meeting.* Secretary, Ernest C. Willard, 720 Corbett Building, Portland, Ore.

MAY 15-16.—ALBANY, GA. (500)
*Association of County Commissioners of Georgia. Annual convention.* Secretary-Treasurer, Fred Houser, 246 Spring Street, N. W., Atlanta, Ga.

MAY 16-19.—PITTSBURGH, PA. (250)
*National Association of Public School Business Officials. Annual meeting.* Secretary, John S. Mount, Inspector of Accounts, State Department of Public Instruction, Trenton, N. J.

MAY 17-18.—COLUMBUS, IND. (150)
*Indiana Association of Chiefs of Police. Annual meeting.* Secretary-Treasurer, A. G. Eversole, Sheriff, Lafayette, Ind.

MAY 22-23.—WILKES-BARRE, PA. (100)
*Pennsylvania Association of Planning Commissioners. Annual convention.* Secretary-Treasurer, Arthur Cassell, City Planning Commission, Allentown, Pa.

MAY 25.—HARTFORD, CONN.
*Connecticut Chamber of Commerce, Inc. Annual meeting.* Executive Vice-President, H. E. Hasty, Executive Offices, 410 Asylum Street, Hartford, Conn.

MAY 25.—NEW YORK. (100)
*National Board of Fire Underwriters. Annual meeting.* General Manager, W. E. Mallalieu, 85 John Street, New York.

MAY 25-27.—BEAR MOUNTAIN, N. Y.
*National Conference on State Parks. Annual meeting.* Executive Secretary, Herbert Evison, Union Trust Building, Washington, D. C.

MAY 29—JUNE 1.—MILWAUKEE, WIS. (400)
*National Fire Protection Association. Annual meeting.* Managing Director, Franklin H. Wentworth, 60 Batterymarch Street, Boston, Mass.

JUNE 5-6.—WASHINGTON, D. C.
*Conference of State and Provincial Health Authorities of North America.* Secretary, Dr. A. J. Chesley, State Board of Health, St. Paul, Minn.

JUNE 7-8.—WASHINGTON, D. C.
*Conference of State and Territorial Health Officers with the United States Public Health Service.* Address: Surgeon General, U. S. Public Health Service, Treasury Department, Washington, D. C.

JUNE 6-8.—LONG BEACH, N. Y. (1,000)
*Conference of Mayors and Other Municipal Officials of the State of New York. Annual convention.* Secretary, William P. Capes, City Hall, Albany, N. Y.

JUNE 7-9.—CANON CITY, COLO. (75)
*Colorado Municipal League. Annual meeting.* Secretary-Treasurer, Don C. Sowers, University of Colorado, Boulder, Colo.

JUNE 9-10.—GREENWICH, CONN. (75)
*New England Association of Commercial Executives. Annual meeting.* Secretary, P. N. Hall, Chamber of Commerce, Westfield, Mass.

JUNE 9-10.—STATE COLLEGE, PA.
*Pennsylvania Commercial Secretaries' Association. Annual meeting.* Secretary-Treasurer, R. W. Crist, Chamber of Commerce, Harrisburg, Pa.

JUNE 11-17.—DETROIT, MICH. (4,500)
*National Conference of Social Work and Affiliated Associations. Annual conference.* General Secretary, Howard R. Knight, 82 North High Street, Columbus, Ohio.

JUNE 11-17.—DETROIT, MICH.
*American Public Welfare Association. Annual conference held with National Conference of Social Work.* Director, Frank Bane, 850 East 58th Street, Chicago, Ill.

JUNE 11-17.—DETROIT, MICH.
*Association of Community Chests and Councils. Annual meeting held with National Conference of Social Work.* Executive Director, Allen T. Burns, 1815 Graybar Building, New York.

JUNE 12-16.—CHICAGO, ILL. (1,200)
*American Water Works Association. Annual convention.* Secretary, Beekman C. Little, 29 West 39th Street, New York.

JUNE 12-15.—BOSTON, MASS. (500)
*National Association of Purchasing Agents. Annual convention and Informashow.* Secretary-Treasurer, G. A. Renard, 11 Park Place, New York.

JUNE 12-17.—CHICAGO, ILL. (1,200)
*National Association of Real Estate Boards. Annual convention.* Executive Secretary, Herbert U. Nelson, 59 East Van Buren Street, Chicago, Ill.

JUNE 12-14.—GALVESTON, TEXAS. (250)
*City Marshals and Chiefs of Police Union of Texas. Annual convention.* Secretary, George A. Smith, P. O. Box 299, Dallas, Texas.

JUNE 12-14.—TYLER, TEXAS.
*Texas Commercial Executives' Association. Annual convention.* Secretary, Carl A. Blasig, Brady, Texas.

JUNE 13-15.—CINCINNATI, OHIO.
*Municipal Finance Officers' Association of the United States and Canada. Annual meeting.* Executive Director, Carl H. Chatters, 850 East 58th Street, Chicago, Ill.

JUNE 20-22.—LEWISTON, MAINE. (800)
*New England Association of Fire Chiefs. Annual convention.* Secretary-Treasurer, John W. O'Hearn, 99 Main Street, Watertown, 72, Mass.

JUNE 20-23.—CHICAGO, ILL. (300)
*Smoke Prevention Association. Annual convention.* Secretary, Frank A. Chambers, 1411 City Hall Square Building, Chicago, Ill.

JUNE 21-22.—GALESBURG, ILL. (60)
*Illinois Association of Sanitary Districts. Annual meeting.* Secretary-Treasurer, G. H. Radebaugh, Urbana & Champaign Sanitary District, Urbana, Ill.

JUNE 21-23.—HIBBING, MINN. (400)
*League of Minnesota Municipalities. Annual convention.* Executive Secretary, Morris B. Lambie, University of Minnesota, Minneapolis.

JUNE 23-24.—HARRISBURG, PA. (300)
*Eastern Association of Fire Chiefs. Annual convention.* Secretary, F. E. Soule, Coatesville, Pa.

JUNE 26-30.—CHICAGO, ILL.
*American Institute of Electrical Engineers. Annual summer convention.* Assistant National Secretary, H. H. Henline, 33 West 39th Street, New York.

JUNE 26-30.—CHICAGO, ILL.
*American Society of Mechanical Engineers. Semi-annual meeting.* Secretary, C. W. Rice, 29 West 39th Street, New York.

JUNE 26-30.—TORONTO, ONT.
*National Tuberculosis Association. Annual meeting.* Managing Director, Kendall Emerson, 450 Seventh Avenue, New York.

JUNE 27-30.—CHICAGO, ILL.
*American Society of Civil Engineers. Annual convention.* Secretary, George T. Seabury, 33 West 39th Street, New York.

JUNE 28-29.—CALGARY, ALTA. (100)
*Union of Alberta Municipalities. Annual convention.* Secretary-Treasurer, J. E. Fraser, Wetaskiwin, Alta.

JUNE 28-30.—WAUKESHA, WIS.
*League of Wisconsin Municipalities. Annual convention.* Secretary, Frederick MacMillin, 114 North Carroll Street, Madison, Wis.

JULY 1-7.—CHICAGO, ILL. (11,000)
*National Education Association of the United States. Annual meeting.* Secretary, J. W. Crabtree, 1201 16th Street, N. W., Washington, D. C.

JULY 15-22.—STANFORD UNIVERSITY, CALIF.
*Western School for Commercial Secretaries. Annual session.* Manager, Leonard E. Read, 304 Merchants Exchange Building, San Francisco, Calif.

JULY 31—AUGUST 3.—CHICAGO, ILL. (700)
*International Association of Chiefs of Police. Annual convention.* Secretary, George Black, Chief of Police, Wilmington, Del.

AUGUST 21—27.—SAILING FROM CLEVELAND TO CHICAGO. (600)
*International Association of Fire Chiefs. Annual convention.* Secretary, James J. Mulcahey, Yonkers, N. Y.

SEPTEMBER 5-7.—STATE COLLEGE, PA. (130)
*Pennsylvania Sewage Works Association. Annual meeting.* Secretary, L. D. Matter, Kirby Health Center, Wilkes-Barre, Pa.

SEPTEMBER 7-8.—NEW YORK. (200)
*National Shade Tree Conference. Annual convention.* Secretary-Treasurer, Rush P. Marshall, Yale University, New Haven, Conn.

SEPTEMBER 7-9.—STATE COLLEGE, PA. (200)
*Pennsylvania Water Works Operators' Association. Annual convention.* Secretary-Treasurer, I. M. Glace, 506 South Office Building, State Capitol, Harrisburg, Pa.

SEPTEMBER 17-20.—CHICAGO, ILL. (350)
*American Institute of Park Executives and the American Park Society. Annual convention.* Executive Secretary, William H. Walker, 2234 Inglewood Place, South Bend, Ind.

SEPTEMBER 18-20.—CHICAGO, ILL.
*International City Managers' Association. Annual convention.* Executive Director, Clarence E. Ridley, 923 East 60th Street, Chicago, Ill.

SEPTEMBER 21-23.—MILWAUKEE, WIS.
*International Association of Public Works Officials. Annual convention.* Secretary, A. M. Anderson, 100 North LaSalle Street, Chicago, Ill.

SEPTEMBER 24-27.—NEW YORK.
*National Association of Commercial Organization Secretaries. Annual convention.* Secretary-Treasurer, C. M. Anderson, Chamber of Commerce, Memphis, Tenn.

SEPTEMBER 25-27.—MILWAUKEE, WIS. (200)
*American Society of Municipal Engineers. Annual convention.* Secretary, C. W. S. Sammelman, 4359 Lindell Boulevard, St. Louis, Mo.

SEPTEMBER 25-27.—MILWAUKEE, WIS.
*American Water Works Association—Wisconsin Section. Annual convention.* Secretary, L. A. Smith, Superintendent of Water Works, Madison, Wis.

SEPTEMBER 26-29.—WILKES-BARRE, PA.
*International Association of Municipal Electricians. Annual convention.* Secretary, W. H. Harth, Columbia, S. C.

OCTOBER 2-6.—ATLANTIC CITY, N. J. (600)
*National Recreation Association. Annual congress.* Administrative Secretary, Thomas E. Rivers, 315 Fourth Avenue, New York.

OCTOBER 2-6.—CHICAGO, ILL. (3,000)
*National Safety Council. Annual congress.* Managing Director, W. H. Cameron, 20 North Wacker Drive, Chicago, Ill.

OCTOBER 16-19—OKLAHOMA CITY, OKLA. (350)
*Southwest Water Works Association. Annual convention.* Secretary-Treasurer, Lewis A. Quigley, Fort Worth, Texas.

OCTOBER 20-24.—OAKLAND, CALIF.
*American Water Works Association—California Section. Annual convention.* Secretary-Treasurer, R. F. Brown, P. O. Box 506, Stockton, Calif.

OCTOBER 26-28.—ST. LOUIS, MO. (100)
*American Water Works Association—Missouri Valley Section. Annual meeting.* Secretary, Earl L. Waterman, University of Iowa, Iowa City, Iowa.

NOVEMBER 6-8.—STATESVILLE, N. C.
*American Water Works Association—North Carolina Section. Annual meeting.* Secretary, H. G. Baity, University of North Carolina, Chapel Hill, N. C.

# Barrett Tarvia

GOOD ROADS at LOW COST

Hillen Road, Baltimore County, Maryland. Tarvia-built, 1929.

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**PRACTICAL highway engineers, make your choice . . . An unproved paving product or one backed by America's oldest and most experienced manufacturer of coal-tar road-building materials?**

**Tarvia may cost slightly more per gallon, but it costs *much less per-year-per-mile-of-road*. For Tarvia is not just an ordinary road material. It is a uniform, dependable product manufactured to rigid specifications in grades exactly suited to every road-building or road-maintaining requirement. It carries with every order Barrett's unmatched delivery and application service, and the helpful cooperation of experienced Tarvia field men.**

**Above all, Tarvia is assurance of a satisfactory result—smooth, easy-riding, skid-safe road that will give years of low-cost, trouble-free service. Tarvia's 29 year old reputation has been built on that kind of road.**

**The Tarvia field man will gladly tell you more about Tarvia. 'Phone, wire or write our nearest office.**

# NEWS AND ILLUSTRATIONS

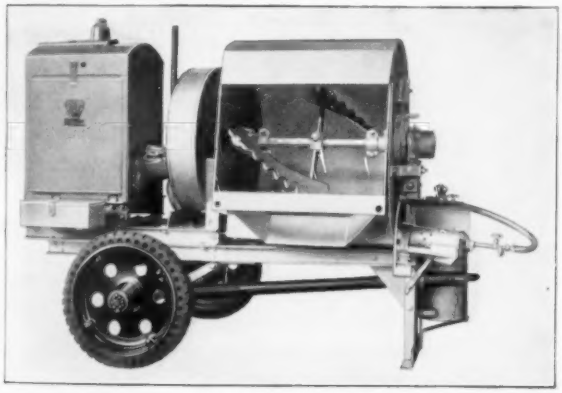
**Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings**

## A New Bituminous Mixer

A new bituminous mixer built in two sizes, 6 to 8 cubic feet and 10 to 12 cubic feet, has been announced by the Kwik-Mix Division, National Equipment Corporation, North 30th Street and West Concordia Avenue, Milwaukee, Wis. This mixer has specially designed adjustable manganese saw-tooth blades with a criss-cross mixing action to accomplish a thorough and speedy coating of the material with a minimum of bitumen. A detachable heater is conveniently located at the end of the machine away from the engine, for safety and efficiency.

The indirect application of heat, by means of a shell around the drum, gives even heat; therefore the material is not burned, nor does it become "balled." A clean drum at all times insures a full batch.

Special features of the mixer bring about easy operation and thorough, efficient mixing of evenly coated material. These machines permit economical placing of cold or hot patch material on location, for bituminous roads. They are also used for centralized plant operation, and for many other surfacing projects.



THE NEW KWIK-MIX BITUMINOUS MIXER

## An Automatic Traffic Whistle

An automatic traffic whistle which is complete within itself, and which has been developed primarily for use in connection with red, amber and green stop and go lights or traffic signals of any make to automatically blow a regulation police whistle as an additional warning of the light change to both motorist and pedestrian traffic, is made by Duers Signal Co., Inc., Glens Falls, N. Y. It is operated by the timer or control box that operates the traffic light, and gives immediate response.

The unit consists of a pressure chamber, a prime mover and a whistle entirely enclosed in a heavy cast aluminum housing which is weatherproof and rust-resisting. The top cap acts as a weather shield and deflector to hold the sound of the police whistle down to the street intersection in which it is installed. The top cylinder acts as a pressure chamber and is carefully bored, ground and lapped to accommodate the piston with 1/1,000-inch clearance. Careful consideration has been given to the designing, so that both the cylinder and the piston will expand and contract equally with weather changes, no matter how sudden or extreme. An electric solenoid is mounted on the lower side of the oil tray casting with two push rods connecting to the underside of the piston by means of two brass knees and two hardened steel pins. Each time the solenoid winding is energized, the armature of the solenoid is drawn up, and the two push rods move the piston upwards in the pressure cylinder, forcing air out through the whistle, which gives immediate response.

## A New Building Material

National Facade block, made by the National Facade Corporation, 730 Park Building, Pittsburgh, Pa., is a new structural unit which incorporates within itself the desirable and architectural requirements for low-cost weathertight, insulated, fireproof, artistically finished jobs. Through the use of an ingenious tongue-and-groove construction, with a means of taking care of excess mortar, the National Facade block completely hides unsightly joints. Genuine facades can be incorporated into the block of convenient size, texture and color, and the finished wall when set up presents exactly the facing desired, at a definite saving in first cost which runs from 20 to 65 per cent, depending upon the type of construction and location.

In the construction of the block due allowances have been made for irregularities in dimensions. They have vertical grooves which make for ideal vertical joints, absolutely tight, with no danger that the joint material will fall away. The saving resulting from smooth wall surfaces in interior finishing and decorating is emphasized strongly by the manufacturer. The interlocking construction, with the method for making horizontal and vertical joints, makes it possible to set this block faster and more cheaply. Arrangements are being made to grant exclusive licenses all over the United States for the sale and manufacture of these units.

## A Governor for Truck Speeds

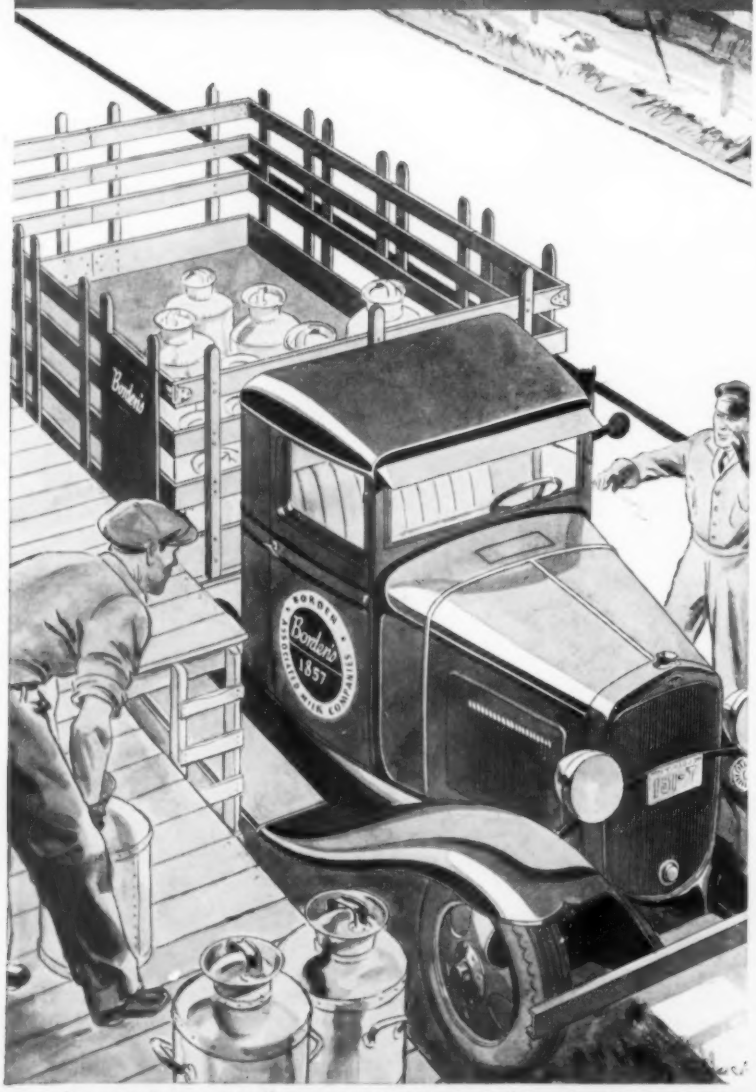
The average truck driver is inclined to "step on it." It seems to be human nature to do so, but this practice, while not always intentional on the part of the driver, means expense to the owner of the truck or fleet of trucks. For safety and economy, trucks should be limited to a safe and sane speed, which will permit each vehicle to do the work for which it is intended, yet restrict it to a speed where rapid deterioration and depreciation are eliminated.

Hoof Products Co., 162 North Franklin Street, Chicago, Ill., has announced a governor for truck engines which is designed to control automatically the speed of an engine. The Hoof governor, a feature of which is the cantilever spring principle, has only one moving part, the butterfly shaft which turns in two self-lubricating bearings. The roller end of the arm of this shaft contacts the cantilever spring which resists the forces of the intake manifold. The case and body of the governor are made of aluminum die casting, bronze for the shafts and adjusting screw and stainless steel butterfly, with special oil-less bearing and the patented cantilever leaf spring of Swedish steel. The key control permits accurate adjustments of speed, and also interchangeability of governors. Engines naturally vary in efficiency, which the key control is designed to correct to uniform speed. A new key lock serves to adjust the governor to the desired speed and locks the cover in place. This places the control of speed of the truck in the owner's hands, with security against tampering. With the Hoof governor, the adjustment can be changed on the initial break-in of the truck every 500 miles, with a final setting at the maximum speed at which the fleet is to be governed. This governor is claimed to perform at no power loss at or below the governed speed and to open up under a load or when the speed drops below the maximum for which it is set.

## Leadite Loses Southwestern Representative by Death

The Leadite Co., Philadelphia, Pa., has announced the death of Walter Hugh Wendler, its southwestern representative, on March 27, 1933. Mr. Wendler was connected with The Leadite Co. for six years, prior to which he had been on the engineering staff of the Texas State Board of Health.

# TRUST THE BORDEN COMPANY to pick the cream of the low-price transportation field




*The*
LEADING CHOICE
*of leading firms for*
LOWEST TRANSPORTATION COSTS
CHEVROLET

One of the best compliments that can possibly be paid a commercial car or truck—is to have leading business firms buy it—and come back for more!

Chevrolet proudly acknowledges a great many of these compliments. Because Chevrolet cars and trucks are now serving over 400 of America's best known, most highly respected business firms.

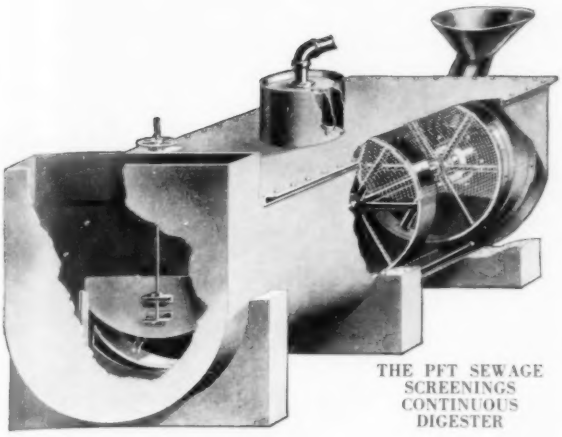
Not only The Borden Company, but prominent national firms in every field of business use the Chevrolet truck—and *like* it. First, because Chevrolet is such a rugged, well-built product; it has the strength and toughness to take unlimited punishment and come back for more. Second, Chevrolet is the lowest priced truck with that unexcelled combination of *"SIX cylinders! Overhead Valves!"*—for maximum power—at minimum expense for operation and upkeep. Finally, the records of companies who keep close track of costs, *prove* that less money is needed to run a Chevrolet. Less for gas. Less for oil. Less for maintenance and repairs. *You can't beat a Chevrolet—for economical transportation.*

CHEVROLET MOTOR CO., DETROIT, MICH.

# CHEVROLET

PASSENGER CARS AND TRUCKS

*Illustrated above is the Chevrolet 157" Stake Truck, $715. Chevrolet trucks are priced as low as $440. Chevrolet passenger cars are priced as low as $445. All prices f. o. b. Flint, Michigan. Special equipment extra. Low delivered prices and easy G.M.A.C. terms.*



THE PFT SEWAGE SCREENINGS CONTINUOUS DIGESTER

## A Sewage Screenings Digester

Sewage screenings can be successfully fermented if the formation of the troublesome surface mat is broken up intermittently or continuously and the entrapped gases liberated. The PFT screenings digester made by the Pacific Flush Tank Co., 4241 Ravenswood Avenue, Chicago, Ill., and 136 Liberty Street, New York, secures these results by providing a means for completely inverting the entire mass of digesting material periodically, causing it to break up and, before it re-forms at the surface, bringing it into contact with the liquor which aids in its digestion. The digester is a standard self-contained unit, built largely of steel and readily installed on concrete or steel cradles. Several drum assemblies may be placed in a single tank in order to secure the desired capacity.

The discharge end wall divides the tank into a relatively large digestion compartment, and a smaller residue or discharge chamber. A cylindrical drum is mounted horizontally within the digestion compartment upon a shaft journaled in bearings carried by the end walls of the tank. The drum is adapted for continuous or intermittent rotation at suitable speeds. The frame of the drum is covered with a cylinder of reticular material, such as wire screening or perforated metal. Each end of the drum is provided with a seal ring which is adjusted so as to prevent the escape of material from within the drum into the outer portion of the fermentation compartment.

The feeding end of the tank is provided with a spout extending through an opening in the tank end wall within the circle formed by the seal ring. The material to be treated may thus be fed directly into the open end of the drum adjacent to the feeding spout. On an installation of fair size, the screenings may be fed continuously and automatically from the screens into the digester. A discharge control gate is provided in the lower end of the end wall to permit stabilized material from the drum to pass out into the discharge chamber. Material discharged into the chamber is withdrawn in any suitable and convenient manner.

The digestion compartment is fitted with a removable gas-tight cover provided with a gas dome having either a tight cover or a removable hood resting in a water seal. A pipe from the gas dome serves to draw out the gas into a suitable reservoir or other device in which the gas may be used or stored. Heating coils are provided, so that a suitable temperature of 25 to 30 degrees Centigrade may be maintained.

The drum is rotated or inverted at least twice a day, or continuously, if desired. This releases the entrapped gases and mixes the tank contents.

## Gamewell Sales Engineer Dies

The Gamewell Co., Newton, Mass., has announced the loss of G. C. Ganss, who was Sales Engineer at its Chicago office. Mr. Ganss was widely acquainted with municipal officials throughout the Middle West and was particularly well known to fire and police chiefs, superintendents of fire alarm, and city electricians in that territory.

## New Hydro-Tite Agent

The Hydraulic Development Corporation, 30 Church Street, New York, manufacturers of Hydro-Tite for making joints in cast iron pipe, a material which requires no calking, has announced the appointment of new agents and representatives as follows: R. E. Olson, Oakland, Calif.; Water Works Equipment Co., Salt Lake City, Utah; E. F. Lee, Chicago, Ill.; S. G. Blowers, Nashville, Tenn.; and J. M. Faunce, Birmingham, Ala.

## A Hand-Controlled Leaning-Wheel Grader

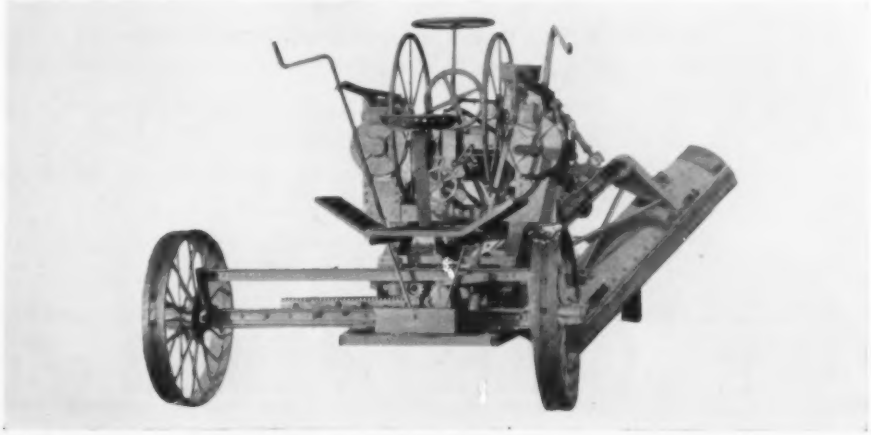
During the past year the heavy 10-foot graders led all other sizes of tractor-drawn graders in the number of units sold, according to Allis-Chalmers Mfg. Co., Milwaukee, Wis. The Allis-Chalmers No. 10 is a conventional hand-controlled, leaning-wheel grader built unusually strong and heavy and yet easily controlled by hand. The front-end construction consists of a large cast steel ball and socket which connects the frame and drawbar to the front axle. This is surrounded by a semi-fifth-wheel plate which adds stability to the frame. The pull of the tongue is directly against the center of the large ball, eliminating any tendency to pull the front truck from under the grader.

The simplicity of the crank-type wheel-lean mechanism used in this machine eliminates trouble in this section. The cast manganese full-circle is turned by a large worm and gear which locks at any point, giving the moldboard the exact angle required. A simple clutch between the large worm and circle-turn pinion may be released instantly, allowing the circle and moldboard to be reversed by ground contact if desired.

This 7,000-pound 10-foot grader is recommended for use with the Allis-Chalmers "35" tractor.

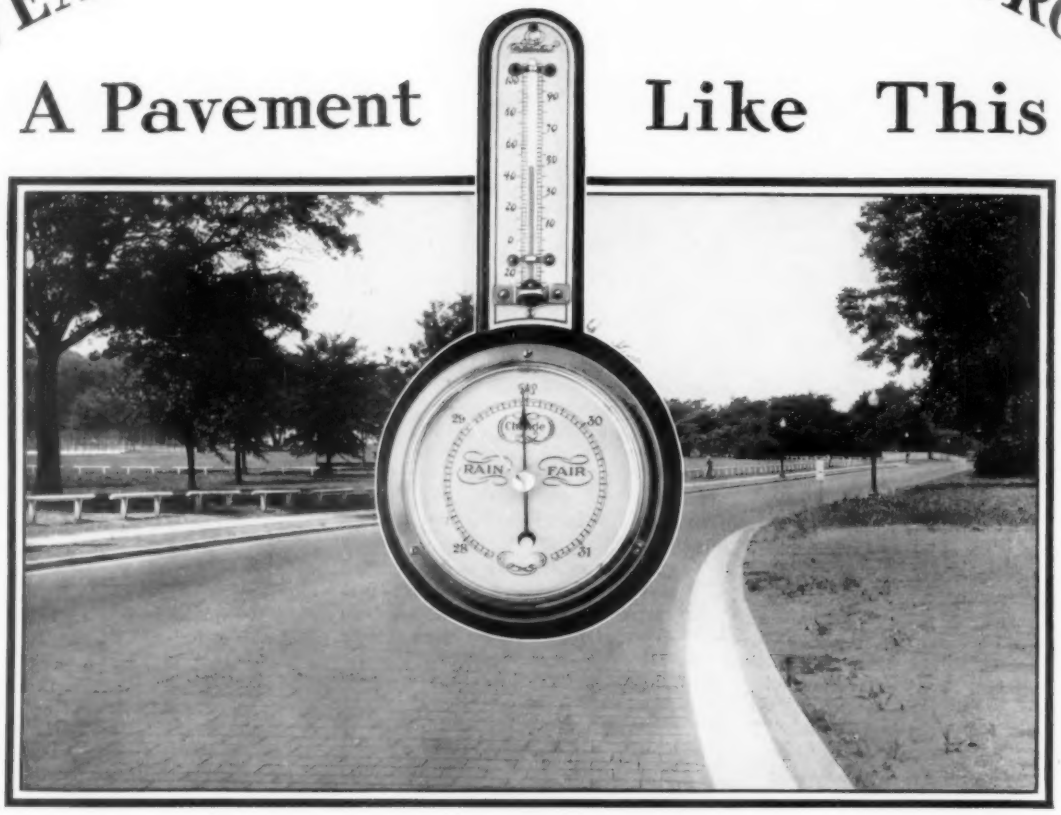
## Simplex Moves New York Office

Simplex Wire & Cable Co., 79 Sidney Street, Cambridge A, Boston, Mass., has announced the removal of its New York City office to 420 Lexington Avenue, New York.



THE ALLIS-CHALMERS No. 10 LEANING-WHEEL GRADER

# WEATHER WILL NEVER DESTROY A Pavement Like This




THE practical road-building experience of the past 15 years shows weather to be an important governing factor in the true cost of a pavement.

Many leading authorities now consider a pavement's ability to resist weather equally, or even more important, than ability to resist traffic wear. For weather affects all pavements regardless of the lightness or heaviness of the traffic.

A brick pavement surface has far greater immunity to weather damage than any other commonly used paving material. It is denser —less absorbent. It is not opened by expansion and contraction; it does not soften under intense heat. Age does not change or weaken its structure. And as for traffic wear, nothing on wheels can damage it.

For these reasons, brick pavements continue to establish all records for long life and low upkeep.

For further information write National Paving Brick Association, 1245 National Press Building, Washington, D. C.

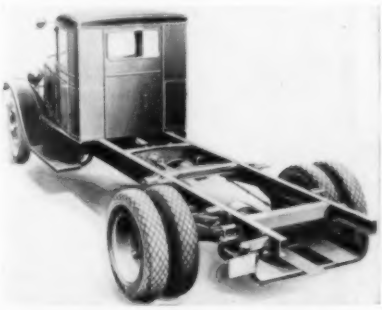
# PAVE and RESURFACE with BRICK

When you write for that catalog, kindly mention THE AMERICAN CITY

## A New 2-Ton Truck for General Hauling

A new 6-cylinder Model B-4 motor truck of 2-ton capacity available in three wheelbases, 145 inches for dump and semi-trailer service, and 170 and 185 inches for general hauling, has been announced by the International Harvester Co. of America, Inc., 606 South Michigan Avenue, Chicago, Ill. The engine of this new truck is of International Harvester design and manufacture and develops 63 bhp at 3,000 rpm. Among the features of the B-4 engine are its 69-pound counterbalanced four-bearing crankshaft, removable cylinders which permit replacement of one or more cylinders without the expense of reboring, hardened exhaust valve seat inserts, full-force feed lubrication, thermostatically controlled cooling system and downdraft carburetion.

The 11-inch, single-plate, vibration-dampened clutch, the four-speed transmission and the engine are mounted as a unit and are suspended at three points in the chassis. High road speed is possible in high or direct gear, while with the three lower reductions ample pulling ability is available for hill climbing and sand or soft roads. Ability to carry capacity loads and withstand distortion caused by road inequalities is assured by the unusually strong frame of heavy pressed steel channels. These channels are 8 inches deep, and tapered at the front and rear ends to provide a low loading platform height. Heavy channel-type cross-members are gusseted to the side-rails. Ample load-carrying capacity is also provided in the full-floating, spiral-bevel-drive rear axle by the use of a heavy, rigid, banjo-type, malleable-iron housing. Included as standard equipment are semi-elliptic auxiliary rear springs and mechanically operated four-wheel service brakes.



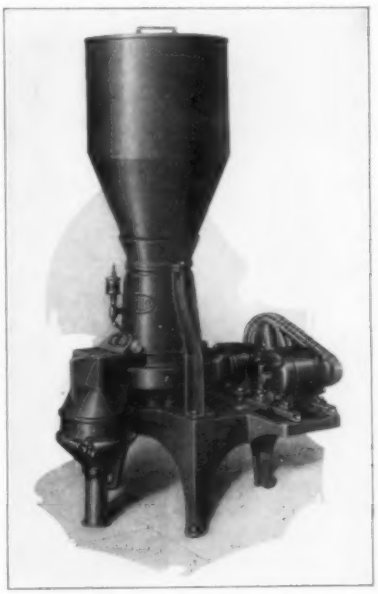
THE NEW MODEL B-4 INTERNATIONAL TRUCK

## Frazier to Represent Ludlow in Northern Ohio

The Ludlow Valve Mfg. Co., Troy, N. Y., has recently appointed the J. W. Frazier Co., 626 Western Reserve Building, Cleveland, Ohio, as its representative in northern Ohio. The Ludlow Valve Mfg. Co. makes gate valves for every purpose, fire hydrants, the new patented Multi valve and specialties of many kinds.

## Garcia Made General Manager of Universal Pipe Sales

The Central Foundry Co., 420 Lexington Avenue, New York, has announced the appointment of Raymond F. Garcia as General Manager of Sales, Universal Pipe Division of The Central Foundry Co. Mr. Garcia succeeds Leonard W. Saine, who held that position and who has resigned to go into business for himself in Orlando, Fla.



THE INFILCO DRY FEED MACHINE FOR WATER-WORKS CHEMICALS

## A Positive Feed Machine for Dry Chemicals

A dry chemical feeder which employs a positive feed principle whereby an adjustable knife, fitted in a stationary ring, cuts off a section of a revolving cylinder of powdered or granular chemicals, contained in a revolving drum and supported on a revolving table, has been announced by the International Filter Co., 59 E. Van Buren Street, Chicago, Ill. The accuracy of the feed is such that samples collected at 5-minute intervals are identical within 5 per cent. Variation in feed over a wide range is possible. The rate is determined by the amount of "cut" into the revolving cylinder of material. The depth of cut is controlled by a worm gear adjustment operated from the outside, eliminating the necessity of any locking device or set-screws. The position of the feed knife is always shown by the large dial and pointer.

The feeder is practically dust-tight, and the storage hopper is covered. The Vortex mixer on this Infilco No. 8 dry feeder assures thorough wetting of the material, draws the dust down into the water funnel where it cannot escape, and makes operation clean. The feeder is furnished with a ¼-horsepower electric motor which drives it through a V belt and a heliocentric speed reducer bevel gear to the table.

The No. 8 feeder can be furnished with any speed range having its maximum twenty times its minimum within the following limits: powdered carbon, minimum 1 ounce, maximum 50 pounds per hour; hydrated lime, minimum 2 ounces, maximum 100 pounds per hour; alum, minimum 8 ounces, maximum 150 pounds per hour.

## Convention Exhibit Prize Contest to Be Repeated at Chicago

The Water Works Manufacturing Association has announced that the Exhibit Contest which was so successful at Memphis in 1932 will be repeated at the American Water Works Association convention to be held at the Hotel Sherman, Chicago, Ill., June 12-16, 1933. In the interest of all exhibitors and to stimulate the spirit of competitive activity, the committee has ruled that no member of the Manufacturers' Association may win the first prize two years in succession. There will be three prizes to exhibitors and three prizes to the active members who display the most intelligent interest in the exhibits as typified in the reports which they submit during the convention. The Special Exhibit Contest Committee consists of Guy C. Northrop, Hydraulic Development Co., New York City; William J. Orchard, Wallace & Tiernan Co., Newark, N. J., and Edgar J. Buttenheim, President, THE AMERICAN CITY.

## Mechanical Sewage Filtration

A filter which is essentially a "string discharge clarifier," and which was originally designed by Filtration Engineers, Inc., for the industry, has been further developed by the Municipal Sanitary Service Corporation, and Arthur Wright and Associates, 155 East 44th Street, New York, for sewage clarification. Fundamentally this filter is a conventional string discharge vacuum filter with a greater part of the drum submerged. The filters may be built in sizes from ½ to 5 million gallons a day capacity. The power required is small, for the largest unit requires but 5 horsepower. A vacuum pump is required only for the purpose of priming. The filter itself, when in actual operation, produces its own vacuum of from 6 to 8 inches of mercury by means of barometric legs. The maintenance costs are low, since only an occasional replacement of filter cloth and strings is required. The cost of these materials represents only a few dollars, while the labor amounts to a few man-hours.

Usually a filter aid is used to increase the degree of clarification. This may be in the form of a shredded waste paper used repeatedly until it is saturated with sewage solids. These filters can be constructed solely for the purpose of clarifying liquids, or they may be constructed as combination units which offer all the clarification features as well as final dewatering of the sludge cake. A sludge cake of low moisture content is thus produced which can be burned in an incinerator.

The ground area required for a vacuum filter plant is very small. The entire system can be housed within a simple building.

**Monroe Ave., Scranton, Pa.**

*Monroe Ave., from Vine to Olive St., Scranton, Pa., was paved with Native Lake Asphalt in 1905. Notwithstanding the terrific pounding of constant use, not one cent has been spent on it for repairs or maintenance in 26 years, and it is still in good condition.*

# Economy! It pays to lay paving that lasts!

For long life and low maintenance cost Native Lake Asphalt proves its service. Its record is outstanding. Millions of square yards of this paving on streets and roads throughout the United States and foreign countries demonstrate the endurance and economy of Native Lake Asphalt.

If the need for new streets and roads confronts you — and reduced appropriations hamper you—consider Native Lake Asphalt.

It not only gives long years of service in new pavements, but will transform old rutty streets and dusty roads into smooth, dustless highways at comparatively low cost. It may be laid over present foundations of old concrete, brick, granite or wood-block—with only the asphaltic top to pay for.

We'll gladly furnish upon request detailed information, giving the interesting service records of Native Lake Asphalt pavements.

**THE BARBER ASPHALT COMPANY**
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**TRINIDAD**
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**ASPHALT**

MODERNIZE YOUR LAWN MOWER WITH A BLUE STEEL

# BRUNITE

## Cutting Blade

*Advantages:*
Retains a keen cutting edge. Eliminates expense of sharpening. Operates with minimum effort.

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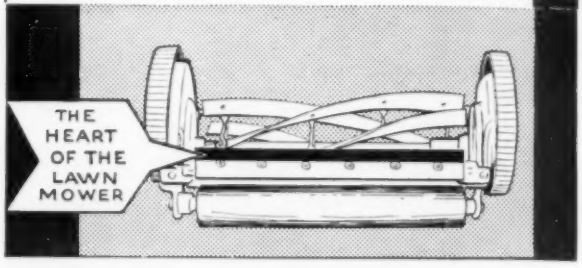
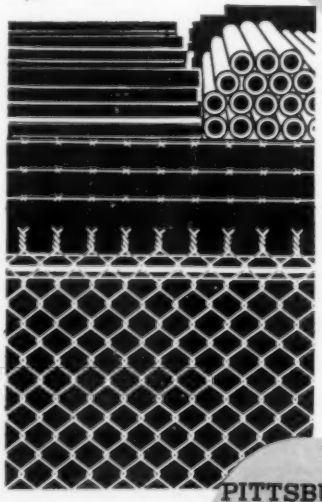
*Of proven value in parks, golf courses and public grounds all over the country. Write for booklet.*

**The Miller Power Lawn Mower Co.**
Manufacturers of
POWER LAWN MOWERS AND ROLLERS
6662 Pearl Road Cleveland, Ohio



**IT PAYS** *to protect* **Public Property**



Unfenced power plants, storage yards, sewage disposal plants and public works of all kinds are easy prey to mischief makers . . . Protect them with Pittsburgh Chain-Link Fence —sturdy, neat and long lasting. We will help you estimate the cost of fencing any piece of property. Our representative will gladly call. Write for catalog. • Also manufacturers of Pittsburgh (National) Reinforcing, Pittsburgh Safety Highway Guard and Pittsburgh Steeltex Wire Lath.

**Pittsburgh Fence**

**PITTSBURGH STEEL CO.**
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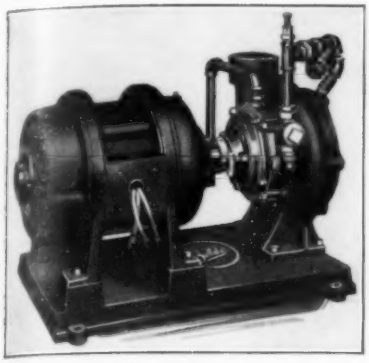
UNION TRUST BLDG.
PITTSBURGH, PA.



THE NEW BUFFALO SELF-PRIMING CENTRIFUGAL

## A Single-Suction Self-Priming Pump

A new single-suction self-priming pump for general service and sewage work, known as Type CP, has been announced by Buffalo Pumps, Inc., Buffalo, N. Y. This pump is compact, sturdy and economical. The casing is of cast iron and the suction side-plate is template-drilled with close clearance with the impeller. Two types of impellers are available; on sump service, or wherever liquids are not clear, the open type is recommended, while for all services where clear liquids are pumped, the enclosed impeller is commonly supplied. Both impellers are of the high efficiency type and are conservatively rated. For general service, bronze impellers are used, but where required, cast iron or other metal is furnished.

The self-priming device is mounted as an integral part of the pump casing. The pump shaft, bronze covered, is an extension of the motor shaft, carrying the impellers for the pump and the primer. With this construction no bearings are used in the pump, both radial and thrust loads being taken by the motor bearings, and of course no coupling is required. The pump is furnished complete with all necessary fittings and is built in several sizes in capacities up to 450 gpm and for heads up to 150 feet.

## Boye New Head of Asphalt Institute

The Asphalt Institute, 801 Second Avenue, New York, at its annual meeting elected B. L. Boye President of the organization to succeed William H. Kershaw of The Texas Company. Mr. Boye, who has been with the Standard Oil Company of New York for 33 years, is now in charge of that company's asphalt and fuel oil activities. Other officers elected were: Vice-President, Leroy M. Law, Shell Petroleum Corporation; A. M. Maxwell, Vice-Pres. of the Standard Oil Company of Ohio; and J. A. Blood, Standard Oil Co. of California. W. W. McFarland, President, Warner-Quinlan Co., was elected Secretary, and Herbert Spencer, Standard Oil Co. of New Jersey, was elected Treasurer, with W. E. Gilligan of the same company as Assistant Treasurer. The Board named C. W. Bayliss, Barber Asphalt Company, to be Chairman of the new Executive Committee with J. S. Helm, Standard Oil Co. of New Jersey, and Messrs. Boye and McFarland as the other members of the committee. J. E. Pennybacker continues as Managing Director of The Asphalt Institute.

## Order for New Airway Lamps

The Westinghouse Lamp Co., Bloomfield, N. J., a subsidiary of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., has received an order from the Department of Commerce, Washington, D. C., for 996 1,000-watt, 115-volt T-20 bulb Mazda airway beacon lamps.

## Tilting Disc Check Valves

A tilting disc check valve which is claimed to eliminate undesirable qualities which are found in many check valves has been announced by The Chapman Valve Manufacturing Co., Indian Orchard, Mass. The tilting disc valve consists essentially of a rigid circular disc, pivoted within a cylindrical housing. The seats are of the circular bevel type, and the disc drops cleanly into contact without rubbing. This is accomplished by arranging the disc to rotate about fixed pivots, offset from the seat.

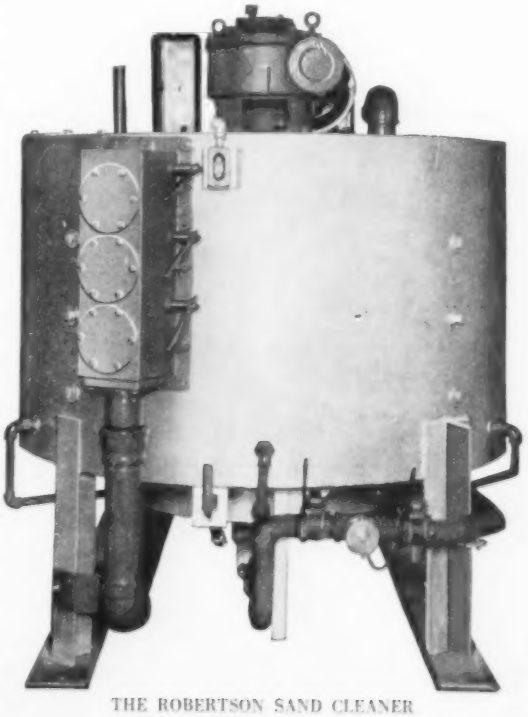
These valves eliminate slamming at closing, which results in water hammer, heavy stress of the pipe lines and damage to the check valves, eliminate large losses of head and do away with severe wear of the moving parts. The pivot on the tilting disc valve is made with a slight curve so that the disc seat makes complete contact with the seat in the body when in the closed position and is drop-tight. The seats move out of contact without any rubbing or wearing, and as the pivots are bushed with nitrided steel, which will wear indefinitely, the result is a tight valve which remains tight. The location of the pivot and the angle and bevel of the seats can be changed to meet numerous applications.

The quick-closing anti-slam feature of the tilting disc check valve is the result of the design in which the disc is hung in the closed position when there is no flow; hence it falls rapidly as the stream flows up, and closes immediately when the stream comes to rest. The angle of the seat is so inclined that the distance the disc must travel from its wide-open position to its seat is reduced to the minimum consistent with good design. A cushioning effect is obtained also by forcing the short flap of the valve against the stream, which helps to stamp out any tendency on the part of the flap to slam.

## Washing and Reclaiming Filter Sand

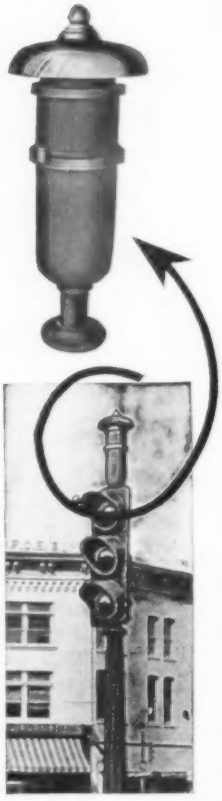
A sand cleaner which will reclaim filter sand, removing more than 95 per cent of the encrustants at a loss of less than 1 per cent of sand, has been announced by the Simplex Valve & Meter Co., 6743 Upland Street, Philadelphia, Pa. The Robertson sand cleaner returns clean, sharp sand to the beds, thus increasing filter efficiency and saving the expense and inconvenience of complete replacement of the sand at regular intervals.

The Robertson sand cleaner consists of two units—a loading hopper and the cleaner. The hopper is placed in the filter bed, and sand is shoveled into it, being conveyed automatically to the cleaning unit. It is deposited into the cleaning chamber direct. The sand cleaner itself is located inside or outside the filter plant and at a level either above or below that of the filter beds. It is operated by electric power and uses an ingenious system of moving and stationary paddles and baffles to create the maximum bombarding action among the sand grains. After a given period of washing the sand is rinsed with clean water, removing the loosened encrustants and carrying them off. Upon completion of the washing and rinsing, the cleaned sand is automatically returned to its original filter bed or is conveyed to another bed, as desired, having been handled by manual labor only once, namely, when shoveled into the loading hopper.



THE ROBERTSON SAND CLEANER

**SPEED TRAFFIC SAFELY *with* Duers Automatic Traffic Whistle**

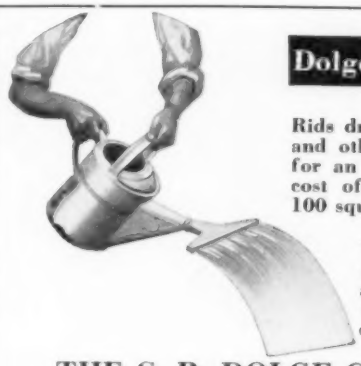


Easily attached to your present traffic signal system, the DUERS Whistle sounds exactly like a policeman's whistle. Its clear, sharp blast as the amber light comes on makes both driver and pedestrian more alert, and speeds up the traffic both in starting and stopping.

"A notable advance in automatic traffic control," say leading traffic engineers.

*Write for illustrated booklet*

**DUERS SIGNAL CO. Inc.**
GLENS FALLS, NEW YORK



**Dolge Weed-Killer**

Rids drives, walks, gutters and other areas of weeds for an entire season at a cost of less than 7c per 100 square feet.

Write for free folders on weed and poison ivy control and free lease of sprinkling cart.

**THE C. B. DOLGE COMPANY**
*Westport* *Conn.*

**LYLE SIGNS**
will help you to

—Reduce Accidents
—Beautify Your City
—Make Permanent Improvements
—Control Traffic

*Write for 1933 Catalog*

LYLE SIGNS, INC.
MINNEAPOLIS

SINCE 1867
**COLDWELL**

*Above: Coldwell "Twin-Thirty" motor lawn mower and roller. Mows and rolls simultaneously 6 to 8 acres a day on one gallon of gasoline. Riding sulky may be had as extra equipment.*

***A Rolled Lawn Is a Better, More Attractive Lawn . . . .***

FREQUENT successive rolling and mowing with a COLDWELL POWER LAWN MOWER and ROLLER produces a heavy, smooth, velvety turf; free from dandelions and less subject to drought attack. With Coldwell equipment your lawn will LOOK BETTER and WEAR BETTER.

***Full details on request.***

COLDWELL LAWN MOWER CO., NEWBURGH, N. Y., U. S. A.
*In Canada—Taylor-Forbes Co., Ltd., Guelph*
*Manufacturers of* ***DEPENDABLE*** *Lawn Mowers*—HAND, HORSE, GASOLINE, ELECTRIC

**Install Stewart Fence**

When fencing problems arise, good judgment dictates that you consider a manufacturer thoroughly experienced in the Fencing Line. Stewart has manufactured Fences of Iron and Chain Link Wire for all purposes for 47 years.

Consult the Stewart pages in THE MUNICIPAL INDEX and write us your needs.

The Stewart Iron Works Co., Inc.
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**Portable Asphalt Maintenance Plants**

A PORTABLE UNIT WITH A CAPACITY OF 400 YARDS PER DAY

ACCURATE CONTROL OF MATERIALS ASSURING ACCURATE MIXTURE TO COMPLY WITH ANY STANDARD SPECIFICATIONS

Send for Bulletin R-400

**HETHERINGTON & BERNER INC.**
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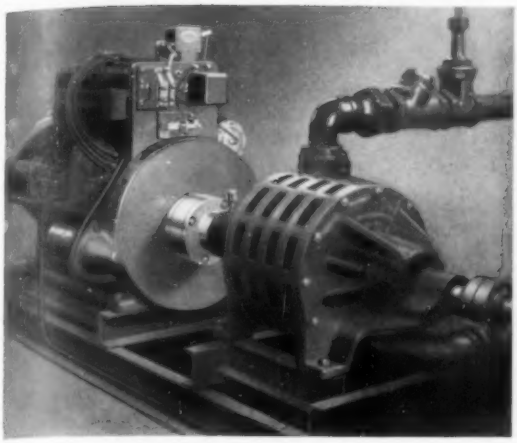
**Stationary — Railway — Portable and Semi-Portable Plants**



A KELPO FREE-WHEELING COUPLING CONNECTING A STAND-BY GASOLINE ENGINE TO A CITY WATER-WORKS PUMP

## A Free-Wheeling Clutch for Stand-by Gas-Engine-Driven Pumps

The Water Department of the city of Los Angeles, Calif., has recently installed on one of its motor-driven pumps a stand-by gasoline engine with a novel feature. The gasoline engine is equipped with an automatic starting mechanism. The pump is normally driven by the electric motor, but in case of power failure, the engine automatically starts up and runs the pump. When the pump is being driven by the motor, the engine is at rest and the clutch free-wheels. A similar application has been made in Lake Forest, Ill.

The Kelpo clutch used for this purpose is made by the Kelpo Clutch Co., Rockford, Ill. It is simple in design, rugged in construction, and built of nickel alloy steels, hardened and ground to close limits of accuracy. It is suited for all speeds up to 3,600 rpm and is not affected by centrifugal force, and runs cool. It is filled with light grease and fitted with a felt grease seal to retain the lubricant. By using Kelpo free-wheeling clutches it is not necessary to use any form of interlock between the two power sources to keep them from pulling each other through the load. For example, in a dual-drive unit with both prime movers running, the faster one will pull the load, and the coupling between the load and the slow motor will take the difference in speed between the two motors.

The Kelpo free-wheeling clutch consists of a gear drive, a set of cam gears mounted in a cage, a set of springs and a case composed of a ring, a drive flange and a cover. The drive gear is mounted on the prime mover shaft and meshes the set of cam gears mounted in the cage, and this entire assembly is contained in the case so that the cams engage the inner surface of the ring. The drive flange is mounted on the load shaft and has the ring and the cover bolted to it to make the complete case which revolves with the load shaft.

When the gear is rotated in the driving direction, it turns the cams in such a direction that they grip the case and drive the load. When the load shaft rotates faster than the prime mover shaft, or free-wheels, the cams allow the case to slip past them freely. The springs serve only to keep the cams in contact with the ring, ready to grip. The cover is a press fit on the ring and is fitted with a felt grease seal where the drive gear passes through it. The flange is a press fit on the ring and is securely bolted to it.

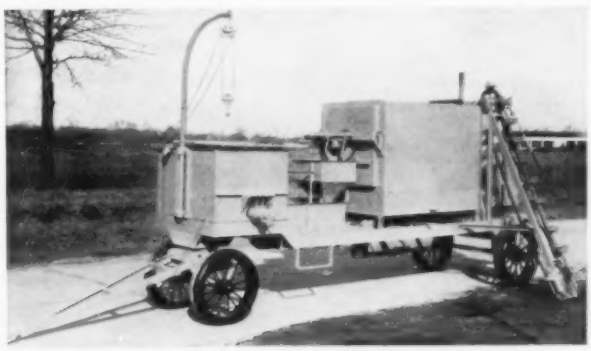
## A Street and Highway Repair Truck

A new model street and highway maintenance machine for state, county and municipal bituminous road and street repair work and the resurfacing of brick and concrete has been announced by the White Manufacturing Co., Elkhart, Ind. This machine is designed to make any formula mix for base, binder or top, sheet asphalt, cutback, oleum spirit, and other volatile mixtures, to match any type of old pavement or to furnish a fine mix for resurfacing hard pavements. It contains a stone and sand dryer, a pug mixer, a detachable bucket elevator, a tar kettle, oil burners, and measuring devices and is mounted on rubber-tired wheels.

The Model L-1 is a complete small asphalt plant to produce high temperature mixes for immediate hot application, or cooler mixes for deferred or cold laying. This model follows the general design of the Chausse-White street repair trucks. The new design, however, makes it applicable for the production of cold-laying mixtures by building the pug mixer in the open and away from fire. Previous models were confined to hot mixing, and the location of the pugmill adjacent to burners prevented the use of highly volatile bituminous oils.

The manufacturer states that the total cost of maintenance work with this machine, including plant operation, interest, depreciation, all material, hauling and labor for laying, should not exceed $4.50 per ton or 22.5 cents per square yard per inch thickness. These costs are based on the experience of users, at a rate of 30 tons per day of medium heat mix, with local aggregate at 75 cents per ton.

This machine can also be used to mix concrete, and in winter the stone, sand and water can be heated. Its capacity is rated at 25 tons per day of high temperature mix and 40 tons per day of low or medium temperature mix. In operation, the dryer is fed by the detachable bucket loader. The rotating dryer is mounted on SKF bearings, is heated by three self-generating oil burners, and has internal blades for cascading the material and advancing it towards the discharge end. The aggregate is measured in a 4-cubic-foot capacity hopper with a bottom gate which discharges directly into the pug mixer. The bitumen is heated in a 150-gallon tar kettle and is measured in a trough graduated up to 6.5 gallons capacity, or 12 per cent mix. The mixed material is discharged from the pug mixer either directly into a wheelbarrow onto a belt conveyor or by raising the machine or digging a pit directly into a truck body. The machine is fully portable and equipped with a towing tongue, and weighs 8,000 pounds. It is offered at a considerable reduction in price from previous street repair plants made by the White Manufacturing Co. and its subsidiary, the Chausse Oil Burner Co., both of Elkhart, Ind.



THE NEW MODEL L-1 WHITE HIGHWAY AND STREET REPAIR TRUCK

Showing tar kettle with burner and barrel hoist, pug mixer, aggregate measuring hopper, enclosed rotating stone and sand dryer, and the detachable bucket elevator and Continental engine

## James R. McClintock Dies

James R. McClintock, of the firm of Fuller & McClintock, consulting engineers, 170 Broadway, New York, died on April 11, 1933. The major portion of Mr. McClintock's professional career was devoted to design work for his firm in the fields of water supply, water purification, sewerage and sewage disposal. He was a member of the American Society of Civil Engineers, American Society of Mechanical Engineers, American Institute of Consulting Engineers, American Water Works Association and American Public Health Association.

## Fuller & Everett Move Offices

Fuller & Everett, civil engineers, have announced the removal of their offices to the 25th floor of the New York Trust Building, 22 East 40th Street, New York.

## Morris Moves New York Office

Morris Machine Works, Baldwinsville, N. Y., has announce the removal of its New York office to 254 West 31st Street, New York.

# Outdoor Lighting

**A Section of *The American City***
**Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings**

## Chicago Exposition Marks Lighting Progress

THE Century of Progress Exposition, which opens in Chicago next month, will present many amazing contrasts with the World's Fair in that city 40 years ago. Particularly striking is the advancement in the art of outdoor illumination.

In 1893 electric lighting was in its infancy, and the Chicago fair in that year represented the first large-scale application of lighting by incandescent electric lamps, especially for decorative purposes; and this was one of the outstanding attractions that it held for crowds of visitors from the United States and the world in general. The furnishing of this illumination was one of the achievements of George Westinghouse. The accompanying photograph shows the pleasing effect produced even in that day.

At the exposition this year not only will large numbers of arc and incandescent lamps be utilized, but between 75,000 and 100,000 feet of glass tubing, indoors and out, will produce light from gaseous discharges. For outdoor lighting alone some 2,100 kilowatts of power will be used.

The development of the illumination for the exposition is in the hands of a joint committee of lighting specialists of the General Electric Co. and the Westinghouse Electric & Manufacturing Co., the committee being headed by W. D'Arcy Ryan of the former company. Mr. Ryan is an internationally known designer of spectacular lighting effects.

Incandescent lamps ranging in size from 10 to 3,000 watts and over 15,000 in number will be utilized in the outdoor lighting. Included in these will be 1,000 floodlights of 1,000 watts each, 2,200 other projectors of 200 watts each, and 375 combination street and floodlighting units of 25 different designs.

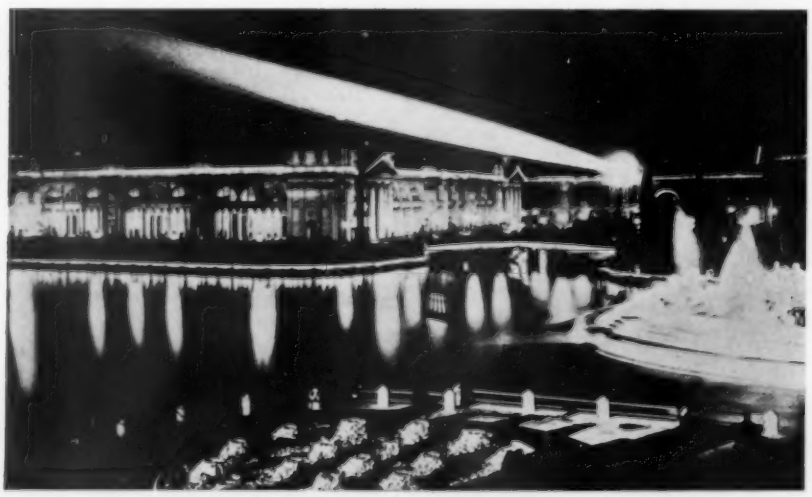
### Unique Lighting of Grounds

General illumination of the grounds will be produced by more than 2,000 special units resembling long-stemmed mushrooms about four feet high. The upper part of this unit consists of an inverted cone of translucent colored micarta, 30 inches in diameter, concealed under which is a series of refracting prisms surrounding a lamp. The cone is mounted on an aluminum stem, the lower edge of the cone being 45 inches above the ground. Clear light from the lamps will be directed upon the ground by prisms, and soft, colored light from the upper surface of the cones will meet the eye of the passerby. These luminaires will be about 80 feet apart and will produce the effect of a shallow sea of light through which the exposition visitors will move.

### Gaseous Tube Illumination

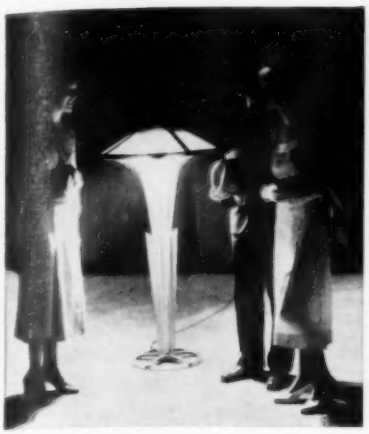
One of the notable effects produced by gaseous-tube lighting will be a cascade of green and blue lights on the exterior walls of the electrical building. One and one-half miles of tubing will be utilized, arranged in seven banks of green and blue tubes rising vertically to a height of 55 feet at intervals around the building. Pools at the base of the walls will contribute spray and steam to add to the unusual effect. Another building to employ extensive exterior gaseous-tube lighting is the hall of science, which has 4,760 feet of tubing, in various colors; a tower 176 feet high is one of the special features externally illuminated. On the hall of social science, adjoining the electrical building, a group of modernistic sculptures is lighted by means of 1,675 feet of blue and silver gaseous tubes. Various other buildings and the portals are also extensively illuminated by exterior gaseous-tube lighting.

One of the striking features in the Westinghouse exhibit, which will be in a structure 70 feet high in the electrical building, consists of eight columns of semi-circular discs, each a wheel of light, spaced along the high facade, 23 feet apart. The discs are 10 feet in diameter, 8 inches thick, and are separated 4 feet apart; there are eleven in each column. In addition there will be floodlighting underneath each disc and for the bare portions of the facade between the columns. The lighting equipment for producing these effects will be mounted on a platform supported between the two bottom discs of the columns, or a distance of



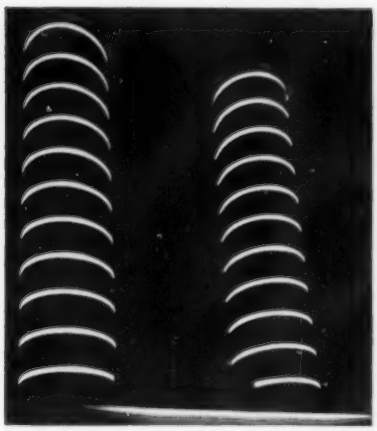
*Photographs by courtesy of Westinghouse Electric & Mfg. Co.*

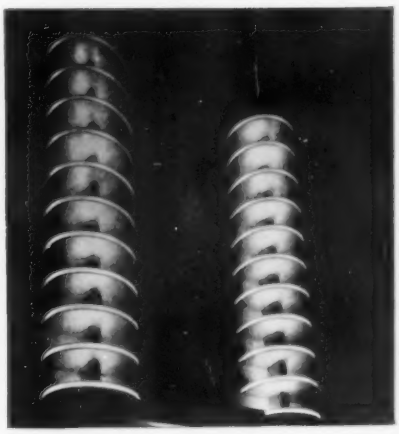
NIGHT VIEW AT THE CHICAGO WORLD'S FAIR OF 1893



"MUSHROOM" LUMINAIRES

These provide illumination for the benefit of sightseers walking about the grounds at night





GREAT DISCS OF LIGHT

These 10-foot discs are lighted on the rim from within. In the right-hand photograph the undersides are floodlighted also. They are part of the Westinghouse exhibit in the electrical building

some 25 feet above the promenade. Colored light of amber, red, and white are available within each disc. Amber light alone will illuminate the under surfaces of the discs and will emanate from openings on the top surfaces of the individual discs. For the spaces on the facade the lighting effects will be obtained from red, white, and blue lights and the innumerable combinations they may produce. Color effects for the exhibit as a whole will form nine major scenes and will blend automatically from one into the other over a period of several minutes. This effect will be produced by the aid of a thermionic control.

A 90-foot combination fountain and pillar of light features the court of the electrical building; and 100 feet in the air above it will be an aurora, formed by an arch of searchlights, all beams of which intersect directly above the pillar and spread out fanlike over the sky. The beams will not be visible until they intersect and form the aurora. This will illuminate all the varying levels and facades of the electrical building and send its glow over the city.

"The Century of Progress will be the greatest night exposition ever held, an Aladdin fairyland," says Mr. Ryan. "It is essentially an exposition of light and color effects, those by night being entirely different from the gay decorations of the buildings by day, and offering the softest and most exquisitely beautiful display of lighting ever known. The color effect will be tremendous, and the aurora is to be one of the monumental effects."

## Per Capita Use of Electricity for Street Lighting Shows Wide Range

A ROUGH indication of the comparative adequacy of street lighting in different cities is the consumption of electrical energy for street lighting, per capita.

W. D. P. Warren, consulting engineer, Decatur, Ill., presented figures for 30 cities in Illinois in the March issue of *Illinois Municipal Review*.

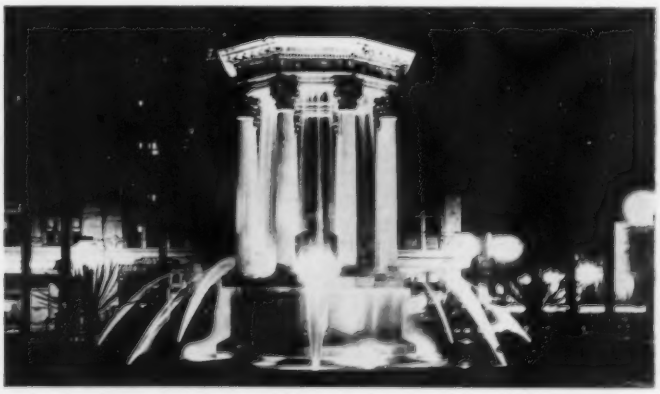
The letters M and P in the table indicate Municipal and Private, respectively, the first column of figures is the population, and the last column the kilowatt-hours per capita per year.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Bethany | M | 802 | 29 | Metropolis | M | 5,573 | 38 |
| Bloomington | M | 30,930 | 32 | Mt. Carmel | P | 7,132 | 9 |
| Carlinville | P | 4,144 | 18 | Mt. Vernon | P | 12,375 | 12 |
| Carmi | M | 2,932 | 70 | Oak Park | P | 63,982 | 50 |
| Decatur | M | 57,510 | 33 | Pana | P | 5,835 | 24 |
| Farmer City | M | 1,621 | 35 | Patoka | M | 546 | 45 |
| Geneseo | P | 3,406 | 18 | Petersburg | P | 2,319 | 19 |
| Granite City | P | 25,130 | 20 | Princeton | M | 4,762 | 37 |
| Heyworth | P | 959 | 8 | Salem | M | 4,420 | 37 |
| Highland | M | 3,319 | 59 | Springfield | M | 71,864 | 35 |
| Hillsboro | P | 4,435 | 10 | Sullivan | M | 2,339 | 33 |
| Hoopeston | P | 5,613 | 19 | Vandalia | P | 4,342 | 17 |
| Leroy | P | 1,595 | 23 | Villa Grove | P | 2,001 | 17 |
| Mason City | M | 1,941 | 39 | Winnetka | M | 12,166 | 25 |
| Mattoon | P | 14,631 | 16 | Woodstock | M | 5,471 | 45 |

## Two Spectacular Illuminated Fountains

WASHINGTON, D. C.

Terrace fountain in the Capitol grounds, provided with six-color Westinghouse lighting equipment



SAN DIEGO, CALIF.

The lighting of this fountain in the Plaza has been modernized with 20 General Electric underwater floodlights and a motor-driven flasher

# Making Highways Safer at Night

COMMENTING on the lighting of the new three-mile high-level steel viaduct between Jersey City and Newark, forming part of route 25 of the New Jersey highway system, Harold G. Hoffman, state commissioner of motor vehicles, expressed his conviction that highway lighting will greatly increase safety for both motorists and pedestrians on highways. The lighting of this viaduct was described in THE AMERICAN CITY for February. Commissioner Hoffman said:

"The menace of night driving is increasing in proportion to the increase in the use of motor vehicles. This menace is augmented by many slow-moving vehicles, dark-colored trucks, parked vehicles, and vehicles with burned-out or defective tail lights.

"There have been in the past, and will be in the future, extensive campaigns against motorists who drive their vehicles upon the highways with inadequate or improper lighting equipment. However, such campaigns will not entirely correct the uncontrollable mechanical factors of vehicle lighting. Highways properly lighted by stationary luminaires would overcome the peril from these uncontrollable factors so that they would cease to be vital to the safety of motorists.

"The pedestrian hazard on unlighted highways is serious. The pedestrian who is walking on a dark highway, in the path of an approaching car, sees the brightness of the headlight illumination all about him. He assumes that he is perfectly visible to the driver. A pedestrian in dark clothing, on an unlighted highway, cannot be seen by motorists until they are dangerously close to him. A pedestrian in any color of clothing cannot be seen at all by drivers who are facing the glaring headlights of another vehicle. These facts are known to most motorists, but are rarely understood by the pedestrians who walk on interurban highways after dark, because these pedestrians have seldom been in the position of the driver.

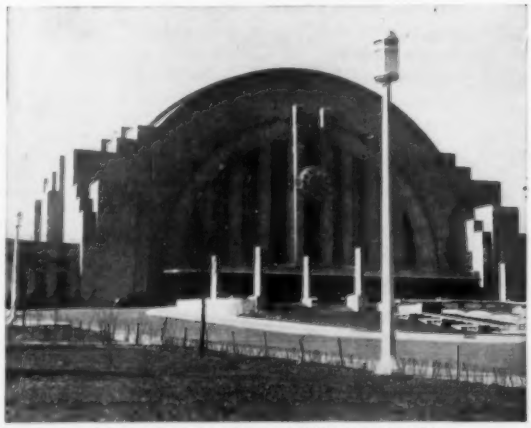
"Such conditions as these have made 'hit-and-run drivers' of many well-meaning citizens. In some cases they did not know that they had hit anything; in others they did not see what they hit, and proceeded on their uncertain journey. Highway lighting removes the pedestrian hazard and eliminates the uncertainty caused by this condition.

"That portion of route 25 which traverses Hudson and Essex counties is lighted as far as the Newark airport. It is unfortunate that our taxpayers and visiting motorists cannot enjoy, on the remainder of this route and on other main highways of the state, the same nocturnal safety that is afforded by this recent, up-to-date lighting installation."

# Modern Lighting for Railroad Station Plaza

THE Plaza of the new Cincinnati Union Terminal Passenger Station is illuminated by lighting units designed to harmonize with the Passenger Station itself. Their design was conceived by the architects and engineers of the Cincinnati Union Terminal Co., and the result utilizes two separate heights of Westinghouse Hollowspun granite standards, of a special concrete mix, and two sizes of special aluminum luminaires.

The larger standards, providing a mounting height of 25 feet, are installed at the curb line of the Plaza approach and are octagonal in shape with a diameter of 25 inches across the flats of the bases. The latter are of the "spider" construction type and are bolted to a concrete foundation at the ground line. A distinctive feature of the design of the bases incorporates, for the first time, the use of Westinghouse Nofuze breakers. These are mounted within the base to give easy access for wiring and are concealed from view by an aluminum cover plate.



CINCINNATI UNION TERMINAL PLAZA

The use of Nofuze breakers eliminates the inconveniences of the old type fuses and fuse plugs.

The luminaires are constructed of cast aluminum, and the side panels are of a new type of high transmission glassware. Each luminaire is provided with an 11-inch Bi-way refractor for directional control of light rays. Each luminaire is equipped with a 2,000-watt, 120-volt lamp, and has the necessary gaskets to make the luminaires dust- and bug-proof.

The smaller standards, placed in the centers of the large parkway areas flanking the approaches to the station, provide a 12-foot height for the light centers. They have been purposely designed low in order to keep all rays below the branches of trees. These units resemble the larger ones, but have 500-watt lamps.

# Small City Installs Modern Lighting Units

THE city of Garrett, Ind., with a population of 4,700, and owning three of its public utilities—electric plant, heating system and water works—has provided a marked improvement in its street lighting by the installation of boulevard lights on Randolph Street, which forms a part of the U. S. Route 27, passing through the city. This lighting was paid for out of the earnings of the utilities, and was part of the city's unemployment relief program.

The old ornamental lighting system, comprising about 50 five-light cluster units, is superseded by modern fixtures, including 25 twin-light and 59 single-light standards. The units are General Electric form 12 with Union Metal Standards. Light centers are 18 feet high in the case of the twin-light units and 14½ feet for the single-light units. Within the twin units will be 20-ampere, 10,000-lumen lamps; the single units employ 6.6-ampere, 4,000-lumen lamps. The five-light cluster standards that are being replaced will be changed to single-light standards for residential districts.

The 25-kilowatt G. E. type RO transformer with 20-ampere secondary and the two 10-kilowatt transformers of similar type with 6.6-ampere secondary are so arranged that certain of the lights are turned off at midnight.

Congratulation are due Mayor Patterson and L. I. Klinker, Superintendent of Utilities, for this modern installation.

5 Cents, $2 a Year

JUNE, 1933

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# The American City

## $3,300,000,000 of Public Works to Start a New Century of Progress

***The Century of Progress now being celebrated in the great Chicago exposition, shown below, can be succeeded, if we so elect, by a century of progress unmarred by disastrous depressions such as that from which we are now emerging. To realize this ideal, two major essentials are: (1) well-planned and well-timed programs of public works and community development on a more rational scale than ever before; and (2) the financing of these programs by methods of taxation which will confer maximum public benefits with minimum private burdens.***

***As a substantial starter for this new and better century of progress, the Federal Administration's program includes $3,300,000,000 for public works and housing. Of this huge sum, state and local projects may receive all but $900,000,000. Of the $2,400,000,000 tentatively assigned to non-Federal projects, $400,000,000 would construct rural and urban state highways; and $1,400,000,000 would be loaned and $600,000,000 given outright for other state, city and county projects.*** ***(See page 5 of this issue.)***